THE BUILDER

VOL. XCVI.—No. 3462. JUNE 12, 1909.

Contents.

	PAGE
St. Bertrand de Comminges	693
The Taxation of Land	696
Notes	697
Architecture at the Royal Academy.—IV.	698
The Royal Institute of British Architects	699
St. Nicholas Hospital, Harbledown	699
The Society of Architects	700
The Concrete Institute	701
Meetings	704
Fifty Years Ago	704
Our Competition for a Fountain Design	704
Illustrations:—	
St. Anne's Church, Limehouse	704
Design for a Bridge for a Commercial City	705
Young Men's Christian Association, Manchester	705
House at Bromley, Kent	706
Notes from France	707
Picture Exhibitions	707
Royal Archæological Institute	708
The Architects' Technical Bureau	708
Architectural Societies	708
Archæological Societies	708
Engineering Societies	709
Books Received	709
Correspondence:—	
"A Diploma Course in Architecture"	709
Middlesbrough Library Competition	709
Concrete Fencing Posts	710
Metropolitan Asylums Board	710
Projected New Buildings in the Provinces	710
London and District Borough Councils	710
Stained Glass and Decoration	710
Obituary	710
General Building News	711
Sanitary and Engineering News	711
List of Competitions, Contracts, etc., Open	712
Miscellaneous	715
Patents	715
Some Recent Sales	716
Prices Current	716
Tenders	717

SUPPLEMENT:—

Reviews of Books.

E. C. S. Moore's "Sanitary Engineering: A Practical Treatise on the Collection, Removal and Final Disposal of Sewage and House Refuse, and the Design and Construction of Works of Drainage and Sewerage, etc."; W. P. Gerhard's "Sanitation and Sanitary Engineering"; W. J. Anderson's "The Architecture of the Renaissance in Italy: A General View for the Use of Students and Others"; F. Clay's "The Origin of the Sense of Beauty: Some Suggestions upon the Source and Development of the Æsthetic Feelings"; "Modern Homes: Selected Examples of Dwelling Houses"; "Domestic Architecture in Scotland: Illustrations of Scottish Domestic Work in Recent Years"; F. Rathbone's "Catalogue of the Wedgwood Museum, Etruria"; H. G. Richey's "The Building Foreman's Pocket-Book and Ready Reference."

Magazines and Reviews.

Illustrations.

Late Renaissance Churches of London.—VI. St. Anne's, Limehouse. Drawn by Mr. J. Quekett.

Design for a Bridge for a Commercial City. By M. Georges E. Piollenc.

Young Men's Christian Association Buildings, Manchester. Messrs. Woodhouse, Corbett, and Dean, Architects.

House at Bromley, Kent. Mr. T. P. Figgis, F.R.I.B.A., Architect.

Illustrations in Text.

	PAGE
St. Bertrand de Comminges:—	
North Door, St. Just de Valcabrère	694
Plan of St. Just de Valcabrère	694
Cloister, St. Bertrand de Comminges	695
Plan of Church of St. Bertrand de Comminges	695
Choir and Organ-Case, St. Bertrand de Comminges	696
St. Nicholas Hospital, Harbledown	700
The Erasmus Money Box	700
St. Anne's, Limehouse. Plan	704
Young Men's Christian Association Buildings, Manchester. First Floor Plan	705
Ditto. Fifth Floor Plan	706
House at Bromley. Plan	707

St. Bertrand de Comminges.

ST. BERTRAND DE COMMINGES, at the entrance of the Vallée de Luchon, is the modern representative of the ancient Lugdunum Convenarum, founded in 72 B.C., though numerous discoveries of the Gaulish epoch, the iron and bronze and the stone ages, prove that the country was inhabited long before. S. Jerome states, in his book against Vigilantius, that Pompey, pressed to go to Rome to receive the honour of a triumph for the pacification of Spain, obliged the brigands and mountaineers to descend from the heights, and assembled them in an "oppidum," which therefore received the name of "Urbs Convenarum." Among them were men of many tribes, the *débris* of the valiant army of Sertorius. Since the town was not named after Pompey, it is probable that there was a Gaulish settlement already, which bore the name of Lugudunum, a name which appears for the first time about 19 A.D., when Strabo states that the Convenæ had Latin law, which Augustus gave them. A fragment of inscription encrusted above the Porte Cabirol, shows that a monument had been raised to the Emperor Claudius by the grateful inhabitants. The ruins of the Roman fortifications stretch from the citadel (the present town) to Valcabrère (which was the lower town), and Roman remains, including an amphitheatre and naumachia, have been found as far as the bank of the Garonne. A Roman road went through it, from Dax to Toulouse, and one to Agen and one to Luchon branched from it. The word "Labroquère" is an alteration of a local word meaning "fork," and near the bridge across the Garonne known by that name a miliary stone with an inscription of the IIIrd century was found.

The Visigoths ruled in the Vth century, replacing the late Roman tyranny with just laws. An inscription in S. Just, Valcabrère, proves that Christianity existed there as early as 347, and the official "Notitia provinciarum" of Honorius (395–423), names Civitas Convenarum as one of the twelve bishoprics of Novempopulonia. The destruction of the ancient city took place in 585, when Gondovald took refuge within the citadel from the army of Gontran. It resisted attack, but the assailants gained their end by treachery. Gondovald was persuaded to go outside the north gate with two of his supporters, Ollon and Boson, who pushed him over the edge of the cliff, and stoned him when he tried to climb up again. The spot is still known as the "rochea de Gondeband." Duke Leudégesille, commandant of Gontran's army, then gave the town to his soldiers to sack, and the destruction was so complete that Gregory of Tours uses the expression, "nihil ibi præter humum vacuum relinquentes."

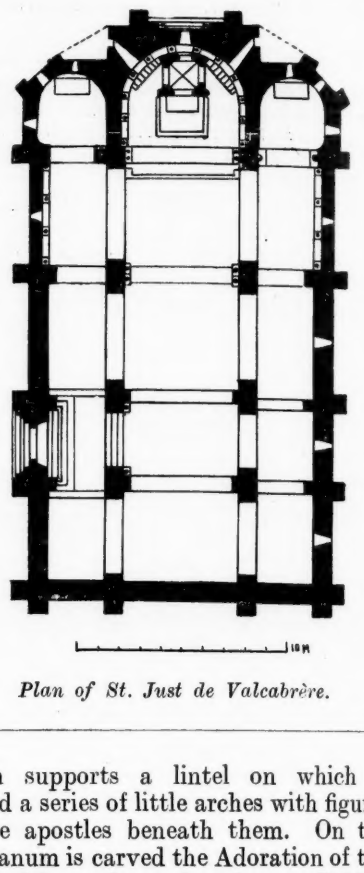
During the period between this destruction and the re-establishment of the episcopal city in 1076 by S. Bertrand, S. Just de Valcabrère was the cathedral of the diocese of Comminges. The church is largely built of antique materials, including carved fragments, and the earliest portion may possibly date from the VIIth century. The floor, covered with marble slabs, is six steps below the level of the churchyard, and the vaults are supported upon ten cruciform piers; three apses terminate the nave and aisles, the central one being the sanctuary. Carved fragments with arms, inscriptions, acanthus leaf carvings, portions of votive altars, etc., are built into the piers and columns, and bits of friezes are attached to all, the finest piece of frieze being upside down in the ninth pier. An antique cap serves as holy-water basin. Many fragments have been taken away to the museum at Toulouse, and others are in private collections. Behind the high altar is a light two-storied erection of the XIIIth century very richly ornamented, which shelters a stone sarcophagus, the shrine of S. Just. The window behind was altered at the same period to allow of the shrine being seen from outside. Round the apse runs a wall arcade of round arches on a kind of stylobate, continued into the eastern bay of the north aisle, the eastern bay of nave and aisles serving as transept, and coupled columns with very rough capitals support the main arch of the apse, the south apse having single columns and remains of the wall arcading existing on the wall of the south aisle. A chequer cornice round the apse returns over the arches of the side apses and is prolonged above the wall arcading. Through the semi-dome of the main apse three small windows are pierced, above the three which appear beneath the arches of the wall arcade.

The door illustrated is on the north side of the church and appears to be of the XIIth century. The four figures in the jambs are said to represent S. Bertrand, a lady of the country from whom he cast out a devil, a priest, and an assistant deacon. The story is also referred to on one of the carved caps; the others show the martyrdom of S. Stephen and

of SS. Justus and Pastor, the patron saints. There are traces of colour still visible—blue, ochre, and a good deal of red. The figures stand upon monsters or monsters' heads. The archivolt has three orders with roll mouldings on the angles of the two inner arches and a kind of bevelled dentil decorating the outermost. Round the tympanum is a band of chequering. In the centre is an enthroned Christ in a vesica; at the sides are figures of the Evangelists bearing the heads of their symbols, the inner two supporting the vesica; above them at each side is a small censing angel. The ironwork of the door has the scrolls so frequently met with in Roussillon. It appears to be original. The east end is most curious in its external arrangement, the apses being square externally, with arches thrown across the angles to allow of the whole being sheltered by one roof slope, of which one remains, and the springing of the other. There is a heavy square tower in front of the apse, apparently of late XIIIth or early XIVth century construction, and remains of two cornices, one but 3 ft. from the ground, round portions of the church. The eastern part is considered to be Carlovingian, the nave vaulting is ascribed to S. Bertrand. In the village three mediæval stone measures serve as base to a cross.

By a winding country road one approaches the hill on which the houses cluster round the great church with its fortified tower, built by S. Bertrand in the latter part of the XIth century. Crossing a little mediæval bridge and passing an archway beneath a tower which was once the gate of the lower city, a zigzag path mounts between houses and up the sides of the hill to the Porte Cabirol, opposite to which is a little look-out in the wall, from which a most extensive view lies spread before one. Above the XVIIth-century gate is an inscription and a relief. Within, the street has several interesting late mediæval houses on either side, and before reaching the little "place" in front of the church (the ancient cemetery), one passes beneath a flying buttress and an early wall pierced with three pointed windows, which belonged to the bishop's palace. By the other gate, the Porte Majou, is immured a curious relief, to a Roman job-master, upon which is carved a car, as emblem of his calling, as well as the inscription.

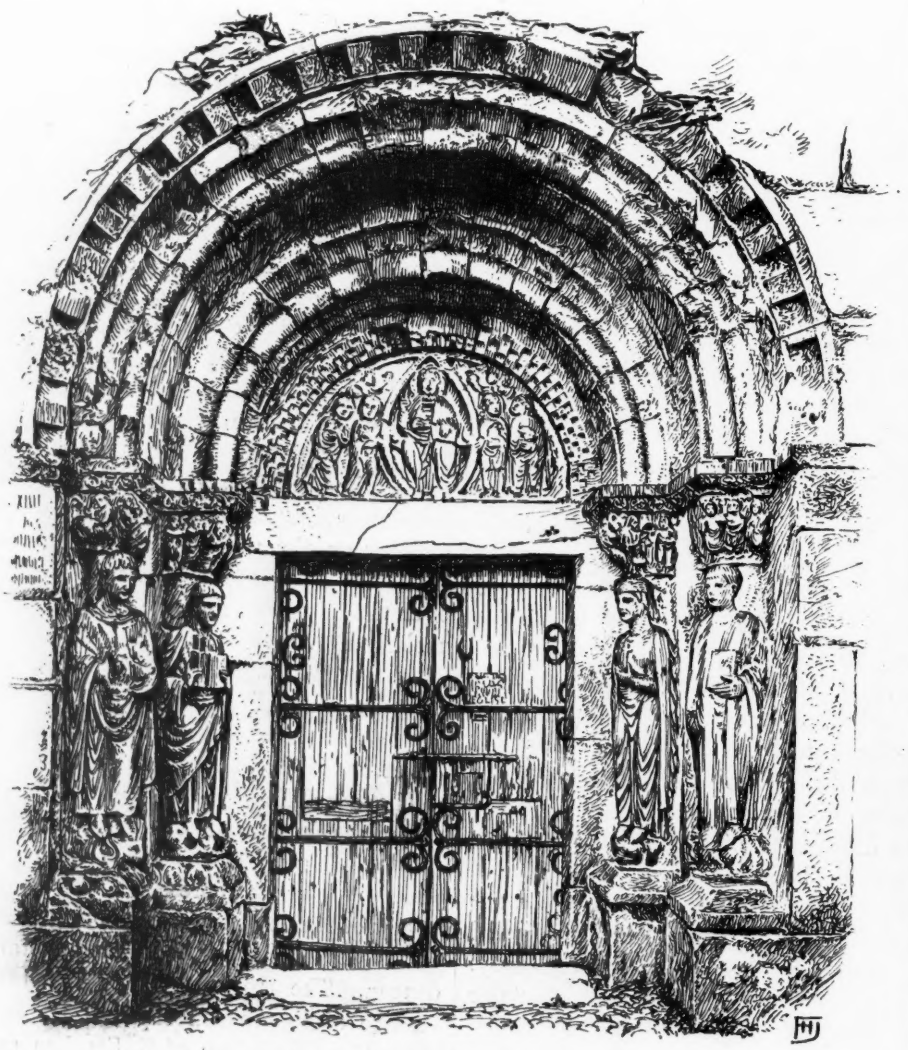
S. Bertrand came of an ancient family of Ile-Jourdain, and was at first a distinguished soldier, but subsequently studied theology and went to Toulouse, where he professed religion. At the age of twenty-five he was canon of S. Etienne, and in 1076 was named Bishop of Comminges by the Pope. The diocese became one of the most important in the south of France. The cathedral was rebuilt in the XIVth century, and additions and alterations made at later periods; but considerable portions of S. Bertrand's work still remain—the façade, the great tower, and the lower part of the walls of the western bays of the nave. The lofty tower has been restored and terminates with a pyramidal roof and projecting "hourds"; it is flanked by ramping walls to half its height of over 100 ft. In the centre is a round-headed door to which fourteen steps (for the most part antique marble slabs) ascend. It has two deep arches almost forming a porch, each supported on two columns on each side, the caps and bases being on the same level as the central column,



Plan of St. Just de Valcabrère.

which supports a lintel on which is carved a series of little arches with figures of the apostles beneath them. On the tympanum is carved the Adoration of the Magi, with angels censing above. Behind the Virgin another slab bears the figure of a mitred bishop with crozier, giving the benediction. Inscriptions in XIIth-century letters run, "Etleo far et miron aspron . . . filium Dei." "Maria Mater." Baron d'Agos held that far, miron, and aspron were the names of the presents offered by the Magi; "aspron" is the name of a silver coin current in Byzantium in the VIth century, a word meaning "white"; "far," probably flour or sacred cake; "etleo" he suggested is an inversion of "teleo," a Greek verb, one of the meanings of which is to offer, to pay a tax. The reliefs are framed by a band of chequers as at Valcabrère, and the angle of the arch has a similar roll with a narrow band of chequers. The caps resemble those at Serrabona, having intertwined animals, strange foliage and figures; on one of them a modification of the usual representation of Avarice may be seen. Above the door is a large semicircular niche, now sheltering a fine antique head, thought to be Jupiter, and there are inscriptions of various dates encrusted in the walls.

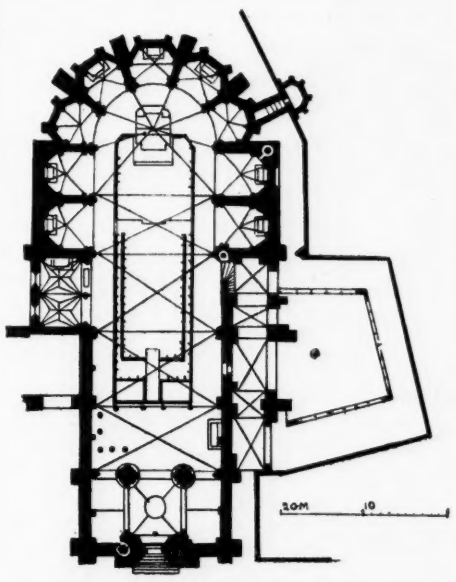
The great piers of the tower rest on circular bases, 12 ft. across, ornamented with big balls. The aisles of the inner porch formed by the tower have half-wagon vaults with one supporting arch and an arcading of two round arches on the wall. This porch opens to the church with a slightly pointed central arch and two lancet arches. Just within the door to the right is an altar, which served as parish church from 1621 to 1790. The plan shows the aisleless



North Door, St. Just de Valcabrère.

nave, about 175 ft. long and 50 ft. broad, surrounded by eleven chapels, and with the canon's choir in the centre. The lower parts of the first and second bays have Romanesque arcading, the door to the cloister is of the same period, and there are traces of built-up windows. The rest of the construction is of the XIVth century. The larger chapels towards the west are the chapels of S. Margaret and of our Lady, the former approached by a flight of steps, and with the chapter house (or library) farther westwards, where the archives are now kept, extending above the northern walk of the cloister. Beneath one of the arches of the opposite chapel is the tomb of Hugues of Castillione, †1352, whose arms on the vaulting show that he was the builder. The body of the tomb has reliefs in white on a black marble ground, Gothic in feeling; the figure of the bishop is probably as late as the XVIth century, with the vestments very delicately worked. One window of the apse is entire, showing the Nativity with the shepherds; in others an annunciation and an Adoration of the Magi are still recognisable, and many coats of arms. The glass is of the XVth and XVIth centuries, and is good. The arms of Clement V. and Jean de Mauléon, to whom the choir is due, appear on the vaults, though the vaulting is XIVth century in style.

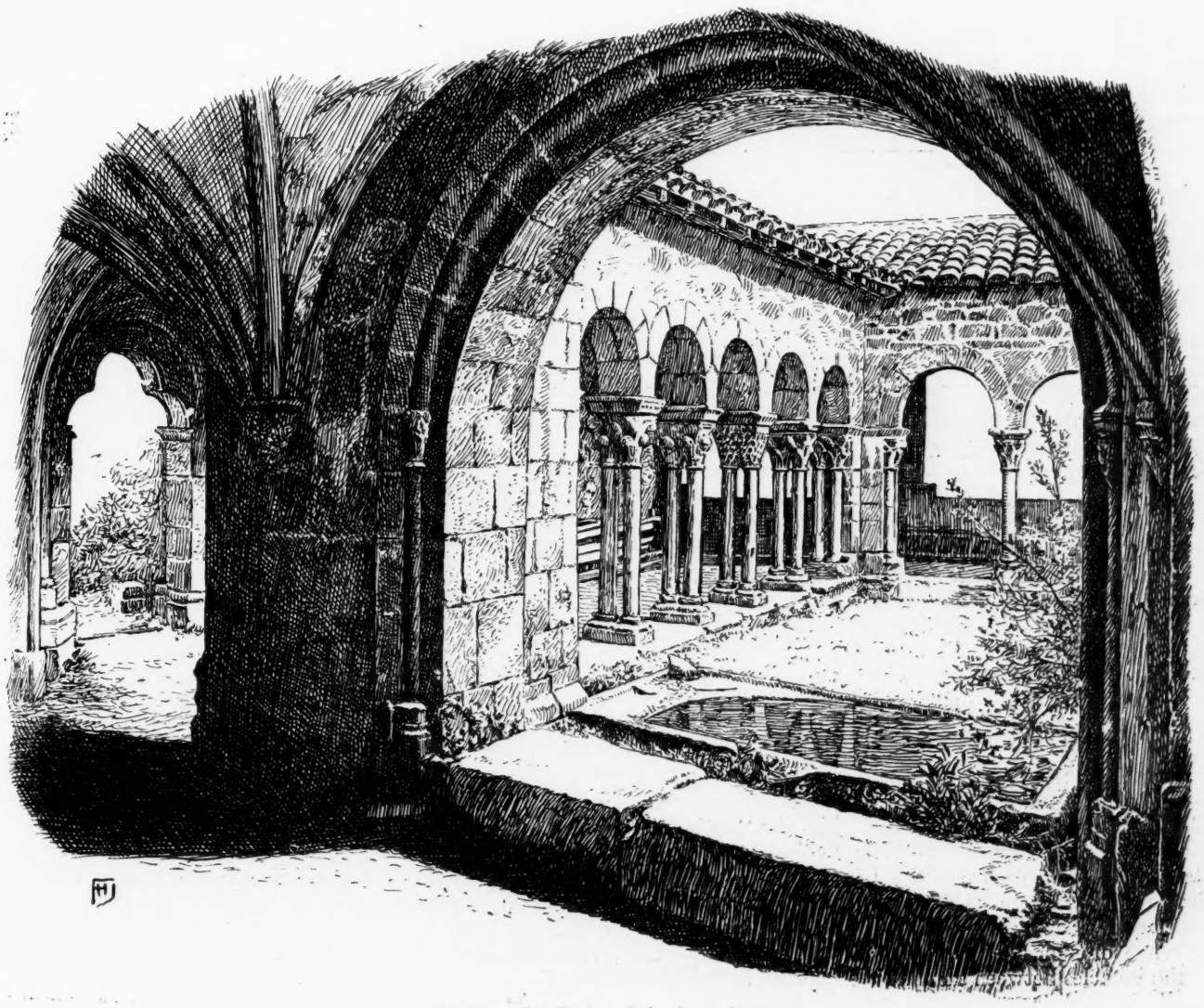
The shrine of S. Bertrand stands in the centre of the apse, separated from the high altar by a narrow passage. It was erected in 1422 by the Cardinal Pierre de Foix, Bishop of Comminges, whose arms appear on the angle pilasters. The sides are covered with paintings of the XVIIth century, depicting incidents from his life. It has a gable roof with pinnacles above the pilasters. A large flat-arched niche surmounted by a pointed arch contains the shrine of silver and ebony;



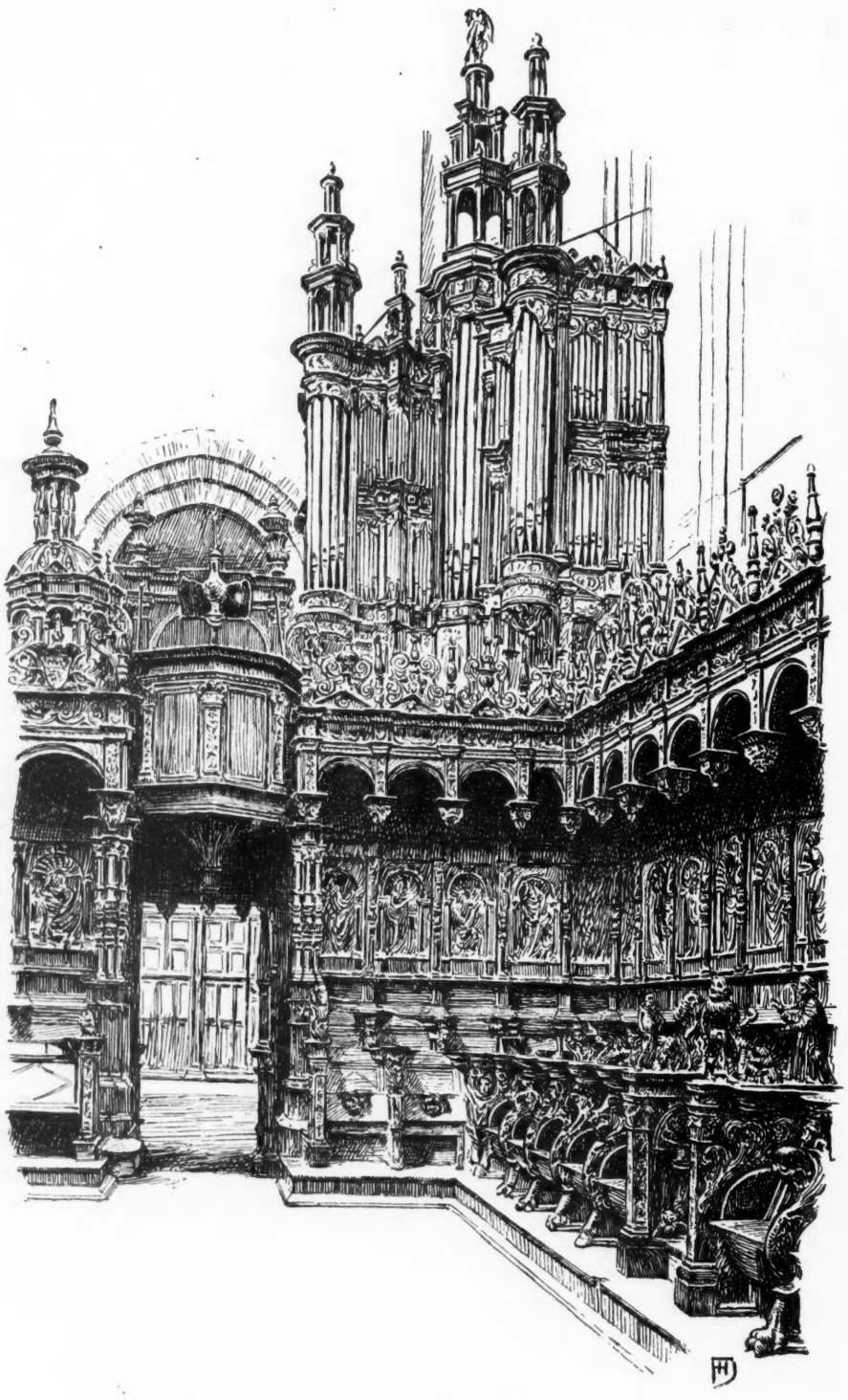
Plan of Church of St. Bertrand de Comminges.

two grated gabled niches are at the sides and a richly-carved panel and three niches above. The statues of the apostles which once decorated it were destroyed in the wars of religion. The altar of S. Bertrand is on the eastern side.

An inscription inlaid on the screen of the choir states that Jean de Mauléon celebrated divine service in it for the first time on Christmas Eve, 1535, and that it was made at his expense. The façade is supported by four Corinthian columns and has above a row of twenty figures in semi-relief, saints of both sexes, and God the Father; beneath the colonnade are six other figures on a larger scale—S. John the Baptist, the Virgin and Child, and S. Geneviève to the right of the door; SS. Sebastian, Bertrand, and Roch to the left. Above the door on the inner side a kind of pulpit projects, formerly used as an ambo; to the right below is a watching chamber and to the left the staircase. There are sixty-six stalls, the upper row having figures carved on the backs of prophets, saints, sibyls, virtues, etc., a miracle of S. Bertrand, and S. Michael triumphing over Satan. The lower stalls are also elaborately carved and have figures standing above the divisions at the entrances to the upper row. The bishop's seat, with an elaborate pyramidal canopy, crowned by a figure of S. Michael, is separated from the stalls by a pierced and carved division with a representation of the martyrdom of S. Peter. It has an inlaid back, as have the canopied seats for the officiants, figures of SS. Bertrand, John the Baptist, and John the Evangelist. Outside slender colonnettes mark the same divisions as the stalls within. The panels have lozenges or other shapes in relief, with a base of square divisions, and above, arched panels with reliefs



Cloister, St. Bertrand de Comminges.



Choir and Organ-Case, St. Bertrand de Comminges.

of men and women's heads alternately. The design terminates with a frieze, pediments surmounted by scroll-work, and divided by candelabrum like pinnacles, vases, chimæras facing each other, sirens, arabesques, and fantastic birds. On each side are sixteen heads, the only persons recognisable being Judith with the head of Holofernes, and Lucretia stabbing herself. The date of 1536 appears on the southern frieze. Round the sanctuary is an open railing of the same style; in the frieze carving is replaced by inlay.

This choir has the repute of being one of the four finest in France, the others being the cathedrals of Amiens and Auch, and the church of Brou. The retable has subjects from the life of Christ and the Virgin set in shell-headed niches divided by little columns; a second range of niches has open-work domes with pinnacles between and statues within, all in the same style. The colouring has been restored and rather overdone. The organ was once one of the finest in France. The case is a marvellous piece of workmanship with four façades, eleven turrets, niches, colonnettes, friezes, etc. All the reliefs are of Pagan subjects, such as the labours of Hercules. It is nearly 50 ft. high and 33 ft. broad, resting on five Corinthian columns; a pulpit, bearing on its panels the symbols of the Evangelists and the device of Jean de Mauléon, being connected with the staircase. When this was used the canons used to ascend to the loft over the entrance to the choir to hear the sermon.

The treasury was once one of the richest in the South of France, but very little remains. It is kept in a little turret on the walls reached from the first of the five apsidal chapels, and contains two fine copes, one given by Clement V. to the chapel of the saint, and therefore supposed to be S. Bertrand's in popular opinion. It is of red silk with gilt embroideries of the Virgin, angels, apostles, and saints. The other has silken embroideries of scripture subjects and figures of saints in medallions amid scrolls on a ground of cloth of gold. There are also two mitres, one of which may possibly have been S. Bertrand's, since it bears considerable resemblance in shape and mode of decoration to that of S. Thomas à Becket preserved at Sens. A pair of episcopal shoes also appears to be of this date, though restored. There is a long staff of ivory, pierced from end to end, known as the "alicorne of S. Bertrand" and said to have been the staff of his crozier; it used to be borne in procession before the shrine, also a crook of Limoges work, and a coffret of the XIVth century covered with "cuir bouilli," in which objects belonging to S. Bertrand were kept. On a ground of arabesques are trefoiled arches with fantastic subjects several times repeated; a knight with lance and shield fighting a dragon, a great bird and a woman standing before it. On the front is the inscription in Gothic letters, twice repeated, "Per l'amor de Madona me combat ab aquesta libra" ("I fight in this livery for love of my lady"). A pair of episcopal gloves appear to be of this date. Near the porch, on the south side, hangs S. Bertrand's legendary crocodile, of which there is no notice till the XVIIth century.

The XIIth-century cloister is of an irregular shape with an unequal number of round arches on the sides, five to the east, eight to the west, and twelve to the south, supported on coupled colonnettes except in two places. In one of these four figures of the Evangelists holding their symbols take their place; in the other two bits of antique columns of different sizes. Two of the caps bear figure subjects. The side against the church has been rebuilt in the XIVth century. It shelters five tombs of canons, that of Sauche, first lord of Labarthe, †1086, and one with the arms of Hugues of Castillione, and is vaulted in unequal bays. The convent library, sold to defray the cost of the re-establishment of the services after the Revolution, was housed on the upper story. Great grey buttresses all round the apse give the impression of massive strength and vigorous age.

THE TAXATION OF LAND.

IN the first day's debate upon the Budget Bill Mr. Austen Chamberlain referred with approval to the Memorandum of the Surveyors' Institution on the proposals for the taxation of land, to which we directed the attention of our readers last week, more especially in connexion with the effect the proposals would have upon those societies which have advanced money upon the security of the land; and it is instructive to notice how the spokesman for the Government, the Lord Advocate, treated this question. He is reported as saying, "If the land was ripe for building and was really undeveloped building land, then building societies would not escape the tax merely because they hesitated and delayed in laying out the land." The whole speech of the Lord Advocate was conceived as though the proposals affected the very rich and not the poor at all; yet when a

question affecting a very thrifty but by no means wealthy class was under discussion, the above was the class of argument resorted to. The Bill affects land with residences exceeding *one acre* in extent, yet the above quotation would seem to assume that the proposals would only apply to "really undeveloped building land," but even so, who is to determine whether it answers that description? An expert valuer, valuing on artificial lines and with no regard to any real demand for the land in question. Again, how can land held as gardens round residential properties near towns or in suburbs be deemed to be "undeveloped"? The scheme is not confined to congested districts, but applies to the whole country, and its general application in itself prevents the valuers taking into consideration any real demand for the land as building land. If all land is to be regarded either as agricultural land or as "land ripe for building" at one fixed moment, what is to become of the demands of an unborn generation with an increasing population?

The present Government came into office crying "back to the land," but the Lord Advocate said that if the Bill stimulated an exodus from the country to the towns, "he would take his chance of that," if the population could get cheaper, more commodious, and more substantial houses in the towns. This denotes a complete reversal of the policy not only of the Government, but of reformers and commercial men who have viewed the growth of the towns with some disquietude, and have fostered enterprise in the suburban areas.

No less unsatisfactory was the reply made to the objection that the proposed taxation would foster development on unsatisfactory lines to the detriment of public health. Open spaces and public parks serve a useful purpose, but they are not the only desiderata.

The Bill marks an entirely new departure in that it is an attempt to foster development by taxation apart from considerations of supply and demand, and the country will look for serious argument from its supporters and for some assurance that essential conditions shall not be sacrificed to fiscal considerations.

NOTES.

The Institute and Professional Politics.

THE meeting at the Institute on Monday night was technically "private"—*i.e.*, reporters not admitted; the result of the election of Council and officers has, of course, been officially communicated to us, and the list will be found on another page; beyond that we do not consider ourselves justified in giving any public information as to the proceedings. But we are inclined to make one or two comments on some points that will be within the knowledge of most members of the Institute. In the first place, the accusation brought against the President and Vice-Presidents of the Institute, of having, in a circular letter to the members, departed from the policy laid down by the General Meeting in 1907, is absurd. The words used—

"As soon as all architects are thus practically united within the Institute, an opportunity will be afforded of considering the possibility of submitting a Bill to Parliament"—

correctly represent the present situation. Secondly, the virtuous indignation of members who, for party purposes, have been doing all they can to influence the voting in one direction, against an attempt on the part of the President to mitigate the effect of this policy, is rather amusing. The President's circular may not have been quite wisely worded; if it had embodied an exhortation to members not to allow their votes to be influenced by party considerations, it would have been absolutely right; and if the Council are to consider the subject of the powers of the President in respect of circular communications, we suggest that they might also take into consideration the propriety or otherwise of systematic attempts by any member or group of members to influence the voting. And lastly, we would ask whether the cause of Registration, which many architects honestly think would or should raise the status of the profession, is likely to be really assisted by a line of action which involves disloyalty to the Institute and to its President, and the effort to vote out of office the best and most eminent architects put up for election on the Council—for that is what it really amounts to. We have been urging, in connexion with this subject, unity and loyalty to the Institute as the representative body, and recent events form a rather painful commentary on the text.

Congress of French Architects.

THE thirty-seventh Congress of French architects will be held this year at Toulouse from the 20th to the 25th of the present month, adjourning to Paris on the 26th for the usual concluding dinner. The first business meeting will be held on the 21st at the Hotel Assézat at Toulouse, which, though sadly mutilated, still remains one of the finest XVIth century buildings in France. On the same day there will be an excursion to Albi. On the 22nd there will be an excursion to the Abbey of Moissac, and on the 23rd to Carcassonne. It will thus be seen that the Congress includes visits to some places of exceptional architectural and archæological interest. On the 24th there will be further visits to buildings in Toulouse, and the presentation of medals to contractors and workmen of the neighbourhood. The morning of the 25th will be devoted to a business meeting, and in the afternoon the party will return to Paris for the closing meeting in the theatre of the Ecole des Beaux-Arts on the 26th, under the presidency of M. Dujardin-Beaumetz, the Under-Secretary of State for Art, when there will be the usual award of "recompenses" to architects and others for work executed during the past year. Owing to the architectural attractions of the district in which it is held, the Congress promises to be of unusual interest, and we should hope may attract some English architects, who might be sure of a cordial welcome.

Railways and Traders.

IN February of last year a Conference was constituted by the Board of Trade to consider various points arising out of disputes between the railway companies and the traders; and the report of this body, which has been issued this week, contains some important recommendations. It has been urged over and over again that some simpler procedure than that of the Railway and Canal Commission should be available for many of the questions which arise. Mr. Lloyd George, speaking as President of the Board of Trade, went so far as to say that "it is a very difficult thing for a trader to fight a great railway company, and I am afraid it is not very much use going before the Railway Commission." As a rule it cannot be said that the cases brought before the Commissioners are not dealt with in a judicial and impartial manner, but it is notorious that the procedure is very cumbersome and costly. It is, therefore, satisfactory to learn that the Conference have recommended a modified procedure tending to the establishment of a cheaper tribunal for the settlement of many of these questions. Among other useful suggestions the Conference recommend the formation of an Advisory Committee on railway matters, which the Board of Trade could consult on such points as they might think fit to refer to it. The conflicting evidence laid before the Board by deputations of traders on the one hand and the railway companies on the other must frequently be most bewildering; and in such cases a committee of experts would be able to clear the ground and very materially assist in arriving at a settlement. It is to be hoped that the pressure of public business will not cause these valuable recommendations to be shelved without practical result.

Sanitary State of Schools in Ireland.

IT will be a shock to many of our readers to be told that in a large number, probably in the majority, of the Irish elementary schools there is practically no provision made for cleaning, heating, and ventilating them, and that their sanitary state is very bad. This fact is admitted on all sides, and in his answer to a recent deputation Mr. Birrell said, "I will never consent to compelling parents to send their children to schools in the unsatisfactory condition so many of these schools are in." It appears that these particular matters are supposed to be paid for by voluntary contributions, and that there are no local rates, and that the educational needs are defrayed from a Government grant. If a rate was authorised by law for sanitary school purposes then the ratepayers would expect to have a voice in the management of the schools, which would upset the managerial system. In other words, we suspect clerical control; so at present the Irish children have to be educated under conditions which are absolutely bad. These facts are indeed a disgrace to the Irish people, and show how little real patriotism there is under frothy talk. We suppose that if a Government were boldly to authorise by Act of Parliament the levying of a rate for this purpose, and were to insist thereupon that funds should be found to put the schools in a proper sanitary state, it would be regarded as a piece of British tyranny.

Safety of Ferro-Concrete Structures.

ACCORDING to Considère the elasticity of the concrete in reinforced concrete beams is very much greater than that of plain

concrete, a conclusion confirmed by the investigations of the French Government and of Professor Schüle, but disputed by various Continental and American authorities. Professor Bach in particular has shown Considère's theory to be untenable, and states that minute cracks must occur in most reinforced concrete structures before the maximum load has been imposed. It may be thought that the existence of such cracks would inevitably lead to corrosion of the steel, but among other evidence to the contrary the experiments of Mr. E. Probst prove that rusting can only commence when the stress on the reinforcement is beyond the elastic limit of the metal. As this condition is never attained in properly-designed structures, it may reasonably be inferred that the safety and permanent durability of reinforced concrete is beyond question.

Electrical Accidents in 1908.

THE Report of Mr. Ram, the Government Electrical Inspector, which has just been published, is interesting and instructive. He draws attention to the large number of serious accidents which occur owing to the use of inferior fittings in portable apparatus. In three cases shocks were obtained from hand lamps, the insulation of which was defective, but in most cases no shocks were received, the injuries being caused by severe burns due to short circuits. If the flexible wire gets damaged, then when the plug of the connector is inserted into the socket a flashing arc evolving great heat will instantaneously form if the fuses used are unduly large. As this arc may occur inside the hand holding the connector, it is easy to see how severe burns can be caused. The Inspector suggests, and we entirely agree with him, that such accidents could be obviated entirely by a slight alteration in the design of plug connectors. There is no reason why the flexible wires should not enter the side of the plug instead of the end. If this were done the hand need never come near the flexible wires. In addition it would add very little to the expense to fix a handle with a small guard disc on to the plug. This would make it absolutely safe and much more convenient. Several of the accidents described prove that the prevalent idea that any kind of connexion suffices as a joint for wires used for "earthing" purposes for the covers of high-tension motors, etc., is entirely fallacious. These joints have to be made as carefully as the joints in ordinary wires. Mr. Ram suggests that in factories where there are many high-tension motors at work it would be better to run a special earthed strip of metal throughout the installation to which all the covers of the high-tension apparatus could be connected, rather than use separate earth plates. In the Report also there is a criticism of some of the apparatus shown at the Manchester Electrical Exhibition last October. Some of the switches and grip fuses that were shown could not be operated without the hand touching a "live" piece of metal. If any part of the body were at the same time touching an earthed piece of metal a dangerous shock would be obtained.

The Willebroeck Canal Mishap.

LAST week an unusual circumstance occurred on the Willebroeck Canal between Brussels and Vilvorde at a point where that important waterway crosses over the River Senne. Late on the Thursday night the water level in the canal was observed to sink rapidly, and before the cause of this phenomenon could be ascertained and effectually dealt with the level of the whole canal had dropped some 5 ft., stranding numerous barges and other vessels on the mud. The breach took place in the walls of a feeder siphon, which collapsed without premonition of any kind, and the escaping water has caused serious inconvenience in the vicinity. Steps were promptly taken to isolate the section of the canal affected; the opening has been closed, and we understand that navigation will again be possible in the course of the present week. It would be interesting to know the exact causes leading to the failure of the siphon, but so far no explanation of this point has been made public.

Fireproof Paints.

A MEETING of the Paint and Varnish Society was held in Painters' Hall, London, on the 3rd inst., to hear communications from M. Coffignier on (1) anti-fouling compositions; (2) fireproof paints; and (3) the manufacture of oil varnishes. Although M. Coffignier was present, he is not able to speak in English, and translations of the papers were therefore read by the Hon. Secretary. M. Coffignier replied in French to the discussions which followed the reading of the first and third papers, and as all his remarks had to be interpreted the meeting did not terminate until a late hour. The communication on fireproof paints was very short and failed to elicit any discussion, but it contained one or two suggestions which should be noted. M. Coffignier recommends the use of ammonium magnesium phosphate, which is almost insoluble in water, as a substitute for the soluble salts of ammonia which are commonly used in fireproof paints. He also advocates the use of a metallic oleate, such as lead oleate, as one of the constituents of fireproof paint. He admits that these paints merely tend to retard the spread of fire, and are not fireproof. Many fireproof paints are, he said, objectionable owing to the fact that they are strongly alkaline. All M. Coffignier's communications were interesting, but all suffered from the attempt to discuss too many subjects in one evening.

Parish Church, Rotherhithe.

ROTHERHITHE Church, which it is now proposed to enlarge, was built in 1715-38 in place of one which had been erected in the XIVth century for a district whereof the greater part belonged to the Abbey of the Holy Saviour, Bermondsey, and which for a long period formed the abode—commonly known as Redriff—of mariners and watermen. The church, constructed of brick with stone quoins and dressings, has a nave, chancel, and two aisles; the projecting tower, square on base, carries a stone spire which rises from a round peristyle having Corinthian columns. The foundations of the former edifice had suffered through inundations of the river. In 1876 Butterfield added a choir-vestry and rearranged the interior, removing the north and south galleries and lowering the pulpit and pews, at an expenditure of nearly 2,000*l*. The organ, by Byfield, 1764, was enlarged in 1859 by Robson. The Bermondsey Borough Council laid out the churchyard two or three months ago. It contains the tomb, erected by the Honourable East India Company, of Prince Lee Boo in testimony of the humane treatment extended by his father, King of Gooroora, one of the Pelew Islands, to the shipwrecked crew of the company's ship *Antelope*, in 1783.

ARCHITECTURE AT THE ROYAL ACADEMY.—IV.

CONTINUING our notes on domestic and street architecture, Mr. Dudley Newman's "Design for the Restoration of Fulbourn Manor, Cambridgeshire" (1428), is a water-colour sketch of a long low white house of old-fashioned appearance, to which is attached a plan; but there is again, as in other instances, no attempt to indicate what is new and what is old, so that the exhibit is not of much value. Mr. E. Guy Dawber's "Tuesly Court, Surrey" (1429), is a very pleasing water-colour drawing of a quiet-looking **E**-plan house of domestic Gothic character, brick with stone dressings; there is a circular carriage-drive in the forecourt; the laying-out of the garden adjoining the house is shown: no plan. Messrs. Silcock & Reay show a sheet of drawings of "Churchill Cottage Homes, Somerset" (1431), built round three sides of a quadrangle, and treated in a quiet homely manner in keeping with the objects of the building.

Mr. Ernest Newton shows a water-colour drawing of the centre portion, including the entrance porch, of "Ardenrun Place, Surrey" (1455), a stone porch with a story over it, forming the centre feature of what appears to be a very plain brick house with a stone cornice carried round the porch projection. We must reluctantly confess that for once we find Mr. Ernest Newton's architecture not very interesting. The other drawing (1459), a line perspective of the exterior, gives a better impression; this is the garden front of the same house, a solid-looking and dignified mansion with two projecting wings and a semicircular columned porch in the centre. No plan, unfortunately, is given.

Mr. Cecil G. Hare's "New Library. Walcot" (1437), is an interior shown in a good water-colour drawing; bookcases half-way up the wall, and a plaster modillion cornice with a deep triglyph frieze; it has the look that a library should have—plain and spacious, and simple in its embellishments. Mr. Arthur Keen's "'Headlands,' Limpsfield" (1438), and Mr. Henry Ward's "Twelve Cottages, Erskine Hill" (1439), have somewhat similar character; white rough-cast ground story and brickwork and red-tiled roofs; the cottages are arranged on three sides of a quadrangle; both buildings are pleasantly picturesque. Mr. Edward White exhibits a drawing of "The New Formal Gardens, Ardross Castle" (1445). In the foreground is a wide flagged path round a circular pond, whence the centre path goes up straight to the house, diversified half-way with an octagon central space punctuated by a sundial; formal parterres of flowers are ranged on each side; the whole makes a dignified and symmetrical garden composition. Next comes Messrs. Ernest George & Yeates's "Additions to Maristow, Devon" (1446), with a block plan showing which are the new portions; the original house has evidently been a rather formal piece of XVIIIth century architecture, and the additions are carefully harmonised with it and have been governed by its style; it

would have been more interesting could we have had a detailed plan, but at all events in this case the architects, in illustrating additions to an existing house, have taken the trouble to show us what is new and what is old. Mr. Bidlake's "The Knoll, Leicester" (1447), is a good water-colour drawing of a picturesquely grouped Gothic house, red brick and stone dressings and mullions, but no plan to explain the meaning of the different features.

Mr. Voysey's "House at Combe Down, Bath" (1450) is a very interesting drawing, giving a plan and two perspective views of the house; an essentially masonry building, as is proper in a stone country, and having a kind of semi-ecclesiastical air about it. It is built entirely round a quadrangle only 40 ft. in width, with a stone table in the centre of the enclosure; it must look very well, but to build entirely round so small a courtyard is not the most hygienic way of planning a residence. This, however, is a very good exhibit; the views are beautifully executed in water-colour, and the plan is on a pretty large scale and is made an important feature, not treated as if a plan were a thing to be ashamed of. Two bits of garden architecture are hung close together, for Mr. Mawson's "Garden at Lees Court" (1460) is strictly architectural in the treatment of the thick square-cut hedges, arranged symmetrically in four blocks abutting on a centre space in which stands a fountain. Mr. Frank Atkinson's "A Garden Pavilion" (1461), treated in rusticated masonry or brickwork, is, if we mistake not, the same design which was carried out in the recent Building Exhibition to illustrate a special class of brick.

Mr. Ashbee's "House at Budapest" (1465: no plan) is an interesting and characteristic house illustrated in a good pencil drawing; it is very simple, but no one could take it for anything but an architect's house. Mr. Guy Dawber's "Netherswell Manor" (1467), we have already illustrated (see the *Builder* of May 15). There are several good small sketches in this part of the room, among which may be mentioned Mr. Walter Brierley's "Bishopthorpe Garth, York" (1474), as a small very good pen-drawing of a picturesque little country house, built on two different levels, and with a plan on which we note that the author recognises that, in a country house, drawing-room and dining-room windows should not have the same aspect; in a town house, of course, it may be unavoidable. Mr. C. E. Mallows's "Proposed House near Abingdon" (1481), rising from water (whether canal or river is not apparent), is a charming pencil sketch, but that is all; it is merely a picturesque view with no architectural element in it.

Mr. Lutyens's "A Façade in Kingsway" (1487), an elevation, is one of the best things in the room, both from the care with which the details have been worked out and the admirable manner in which the elevation is drawn and tinted. The lower portion shows an order of very boldly treated rusticated columns and pilasters, with their own cornice and attic above them; then we have plain wall for two stories, and a main cornice returned on itself, not left to project, how it can, over the next property. Above this is the main attic, with three long low windows divided by deep pilaster-like piers with panelled and carved faces; a pediment appears above, set rather back from the front line. We should have liked to have seen a section of the front, showing profiles and projections; it would then have been quite complete. As it is, it is a most satisfactory and well-thought-out piece of work, a true architectural drawing, of a kind of which one wishes there were more to be seen at the Academy.

Messrs. Kellie & Dickie's "Mission Hospital at Hebron" (1501) is a frankly Oriental building, white in the sun and little troubled with mouldings; there is an octagon central feature with a dome; a small plan is given on the margin of the drawing. Mr. Voysey's "Offices, Capel House" (1518), is an interior of an office with a good deal of original character; we do not gather exactly what is the material of the dark-coloured square columns, but they look well, and the effect of the whole is something quite different from the usual office interior.

Mr. Lucas, who won our prize for the best design for the treatment of a ferro-concrete façade, has made a small perspective of his design (1521), which looks very well; we also see there another of our competitors, Mr. Pike, represented by his very pleasing elevation (1524) which only failed from the windows being too narrow for practical requirements of lighting; and another exhibitor, Mr. Schwabe, shows a small but well-considered design for the treatment of a ferro-concrete building with marble veneer (1553), which is worth attention. Mr. Flockhart's "Business Premises, New Bond-street" (1533), loses some of its effect from the sloppy execution of the water-colour drawing; it is a good effort at some originality in the treatment and arrangement of classic details in a shop frontage. A very small drawing by Mr. Greenslade called simply "Collegiate Buildings" (1537) shows a plan which ought to have a fine effect, the buildings occupying the sides of a very long rectangular central court, with a double colonnade across it at one point, and other features which promise a stately architectural effect; the elevations, very delicately executed, are however almost too minute to make much out of them.

Mr. Wornum's small coloured elevation of "Design for a Small House in Mayfair" (1540), sober as it is in style, has a good deal of interest, as a classic treatment with a little novelty about it; there are two stories of rusticated walling, over which is a recessed portion decorated with an order of very slender Ionic columns, which (from the shading) appear as if they are intended to be octagonal; a curious experiment if it is so; but at all events the front is well balanced and agreeable in general character. Mr. Bolton's drawing, which is rather oddly called "Interior of an Agency" (1547), was illustrated in our issue for May 29.

We will notice next week the few exhibits which may be classed under the head of Decorative Design.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ANNUAL ELECTIONS.

AT the business general meeting of Monday, 7th inst., the Officers, Council, and Standing Committees for the ensuing session were declared duly elected, in accordance with the scrutineers' report, as follows:—

The Council.

President.—Mr. Ernest George.

Vice-Presidents.—Professor Reginald Blomfield, A.R.A., M.A.Oxon., F.S.A.; A. W. S. Cross, M.A.Cantab.; E. Guy Dawber; J. Sivewright Gibson.

Hon. Secretary.—Mr. H. T. Hare.

Members of Council.—J. J. Burnet, A.R.S.A. (Glasgow); Max Clarke; W. A. Forsyth; J. A. Gotch, F.S.A. (Kettering); Alexander Graham, F.S.A.; E. T. Hall; G. Hubbard, F.S.A.; H. V. Lanchester; E. L. Lutyens; M. E. Macartney, F.S.A.; C. E. Mallows; E. Newton; A. N. Prentice; Halsey R. Ricardo; J. Slater, B.A.Lond.; Leonard Stokes; Paul Waterhouse, M.A.Oxon; Edmund Wimperis.

Associate Members of Council.—A. E. Munby, M.A.Cantab.; Professor C. H. Reilly, M.A.Cantab.; H. W. Wills; A. Needham Wilson.

Representatives of Allied Societies.—Frederick Batchelor, A.R.H.A. (Royal Institute of the Architects of Ireland); George Bell (Glasgow Institute of Architects); George Thomas Brown (Northern Architectural Association); Arthur Stansfeld Dixon, M.A.Oxon. (Birmingham Architectural Association); Thomas Edgar Eccles (Liverpool Architectural Society); Mowbray Aston Green (Bristol Society of Architects); Percy Robinson (Leeds and Yorks Architectural Society); John Watson (Edinburgh Architectural Association); Percy Scott Worthington, M.A.Oxon. (Manchester Society of Architects).

Representative of the Architectural Association (London).—Mr. Henry Tanner, jun.

The Standing Committees.

Art.—Fellows: Walter Henry Brierley, F.S.A.; Edward Guy Dawber; William Flockhart; James Sivewright Gibson; Henry Thomas Hare; Professor William Richard Lethaby; Edwin Landseer Lutyens; Edwin Alfred Rickards; John William Simpson; Paul Waterhouse, M.A.Oxon.—*Associates:* William Henry Bidlake, M.A.Cantab; Arthur Thomas Bolton; Sidney Kyffin Greenslade; Thomas Geoffry Lucas; Walter John Tapper; Septimus Warwick.

Literature.—Fellows: Alfred William Stephens Cross, M.A.Cantab; John Alfred Gotch, F.S.A.; George Hubbard, F.S.A.; Halsey Ralph Ricardo; Professor Frederick Moore Simpson; Professor Ravenscroft Elsey Smith; Richard Phené Spiers, F.S.A.; Henry Heathcote Statham; Charles Harrison Townsend; Paul Waterhouse, M.A.Oxon.—*Associates:* William Curtis Green; Herbert Passmore; Arthur James Stratton; Harry Inigo Triggs; William Henry Ward, M.A.Cantab.; Percy Leslie Waterhouse, M.A.Cantab.

Practice.—Fellows: William Henry Atkin Berry; Max Clarke; Alfred William Stephens Cross, M.A.Cantab; George Hubbard, F.S.A.; Sydney Perks, F.S.A.; Alfred Saxon Snell; Henry Tanner, junr.; Thomas Henry Watson; William Henry White; William Woodward.—*Associates:* Edward Greenop; Edwin Gunn; Edwin Richard Hewitt; Harry John Pearson; Horatio Porter, M.A.Cantab.; Augustus William Tanner.

Science.—Fellows: Harry Percy Adams; Max Clarke; Bernard Dicksee; William Dunn; Matthew Garbutt; Francis Hooper; Charles Stanley Peach; Sydney Perks, F.S.A.; Herbert Duncan Searles-Wood; Lewis Solomon.—*Associates:* Henry William Burrows, F.G.S.; Edwin Richard Hewitt; Alan Edward Munby, M.A.Cantab; Digby Lewis Solomon, B.Sc.Lond.; Ernest William Malpas Wonnacott; Ernest Alexander Young.

Auditors.—John Hudson; Charles Edward Hutchinson.

There were also elected at the meeting the following gentleman, *i.e.*:—

As Fellows.

A. T. Bolton (Soane Medallist 1893, Institute Medallist (Essays) 1895), London.
F. D. Clapham, London.
H. A. Crouch (Tite Prizeman 1896), London.
J. S. Heath, London.
E. Skinner, Colombo, Ceylon.
P. L. Waterhouse, M.A.Cantab., London.

As Associates.

D. Macpherson Gordon, Montreal, Canada.
J. C. Morrell, Melbourne, Victoria.
H. B. Richards, Detroit, Michigan, U.S.A.
W. A. Rigg, London.

ST. NICHOLAS HOSPITAL, HARBLEDOWN.

ST. NICHOLAS HOSPITAL at Harbledown, situated on the London road one mile from Canterbury Cathedral, can justly claim to be one of the oldest foundations of its kind in the country. It was founded in 1084 for the relief of lepers by Lanfranc, the Italian cleric brought by William I. from the Abbey of Bec, to be set at the head of the English Church. The fact that it was built ten years prior to the first Crusade is interesting as throwing doubt on the generally accepted idea that leprosy was unknown in England until introduced here by the returning Crusaders.

The existing structure, although partly rebuilt with brick in the reign of James II., contains a considerable portion of the

original Norman building, while the walls of the interior are covered with a number of old fresco paintings. A curious feature of the church is the downward slope of the floor from the altar to the west doorway. This was unquestionably designed to drain off the water with which the church was flooded after the lepers had attended mass. The same thing is observable at Shaftesbury, and in many of those churches that were built to accommodate large bodies of pilgrims. In many of the churches the pilgrims, with clothing, feet, and bodies covered with the dust and filth of the journey, would spend the whole night before the hallowed shrine or saintly relic, with the consequence that the necessity arose of devising some simple means of flushing the floors with water.

Some interesting relics are preserved in the building, including the famous "Erasmus" money or alms box, of which tradition gives the following account. When Erasmus visited the hospital in the company of Dean Colet one of the brethren presented a holy relic for the travellers to kiss before being sprinkled with holy water. The relic was a portion of a shoe once worn by St. Thomas of Canterbury. The dean declined the proferred favour with such an outburst of wrathful rhetoric that the courteous Erasmus must needs make amends, and appease the astonished brother, by dropping a goodly donation into the box, at that time fastened by a chain, of which a few links remain, to a tree near the hospital gate, or at the end of a long pole, so that the passer-by might give his donation at a safe distance from the inflicted lepers. Other relics to be seen are some good "London" marked pewter plates and tankards, a set of wooden trenchers, and a maple mazer, or drinking cup, with a silver-gilt relief whereon the carver has engraved the combat of Guy, Earl of Warwick, with a dragon.

SIDNEY HEATH.

The new Council schools, High Clarence, are being ventilated by means of Shorland's patent exhaust roof ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

THE SOCIETY OF ARCHITECTS:
EXHIBITION OF PRIZE DRAWINGS.

THE designs submitted for the Travelling Studentship annually awarded by the Society of Architects, together with those sent in for a prize of 3*l.* 3s. offered by Mr. Edgar M. Leest, have been on exhibition during the current week at the Society's offices in Staple Inn-buildings. The subject set for the first mentioned award was a Secondary School, to accommodate 100 boys and 100 girls, to be planned in full conformity with the latest regulations of the Board of Education. The supposed site showed a main frontage of 225 ft. to the north-west, and side roads to the north-east and south-west of indeterminate length. The accommodation required comprised four class-rooms for each sex, headmaster's and headmistress's rooms, assembly-hall, the customary cloak-rooms and lavatories, chemistry and physics laboratories for elementary and advanced students, with balance-room and preparation-room, lecture theatre, manual instruction room, cookery-room, two art rooms, and two music rooms. Twenty-five sets of drawings

The Erasmus Money Box

St Nicholas Hospital, Harbledown

Sidney Heath

were sent in; the Council awarded 25*l.* and Silver Medal to Mr. C. Ll. Hudson, 12, Almeida-street, Islington, N., and a special prize of 10*l.* to Mr. G. Ll. Evans, 29, Bridge Avenue-mansions, W.

The scheme submitted by the former gentleman is unquestionably superior in convenience and compactness of plan, while that of Mr. Evans displays more mastery in the elevations. Mr. Hudson makes his hall serve as part of the main corridor, and places his entrance flanked on either side by the headmaster's and headmistress's rooms in a single-story projection in front of the hall. The convenience of this arrangement (adopted in many recent secondary school buildings) counterbalances the awkwardness of the resulting elevation. The manual instruction room is well placed away from the main block on the boys' side, together with the conveniences and playing-shed; these are reached by a covered passage. A similar arrangement prevails on the girls' side. Altogether this is a design which displays great promise. Mr. Evans's elevations are very good, but the corridors would be very dark; on the other hand, he has not made a thoroughfare of the assembly-hall; though we incline to believe that this is a doubtful advantage.

There is a wide gap between the work of these two gentlemen and that of the other competitors. Of these, the set numbered 26 shows the most ability. The elevations, though erring perhaps on the side of eccentricity, display genuine powers of design and tolerable draughtsmanship. No. 8 is marked by a sense of orthodoxy and proportion in the elevations, which, however, are very indifferently drawn; not that this is an extremely important fault. The author may console himself with the reflection that Wren was not greatly his superior in this respect. The elevations of the scheme numbered 18 are not at all bad. The hall is placed end-on to the frontage, and the effect of the large semicircular window is distinctly good. No. 3 is shown to advantage in a well-drawn perspective.

The subject set for the prize of 3*l.* 3*s.* offered by Mr. Edgar M. Leest (open to students whose age did not exceed twenty-three years on March 1 last), was a Volunteer Fire Brigade Station for a country town. The accommodation was to include engine-house, firemen's common room, hose tower, stabling for four horses, harness-room, necessary offices, and living apartments for the engineer in charge. A level corner site, 60 ft. by 70 ft., was supposed. No award was made, as none of the designs sent in were considered to be of sufficient merit. No. 2 is not a bad scheme; the elevations are inoffensive, and suitable to a country town. The hose-tower, however, finishes in a very inept manner. No. 3 is eminently architectural, but much too ponderous; perhaps it was meant as a satire on the prevailing taste. The planning is bad. No. 4 is the most artistic set. The hose-tower is really well designed.

THE CONCRETE INSTITUTE:

SETTING OF PORTLAND CEMENT.

THE fifth general meeting of the Concrete Institute was held on May 27, at the Royal United Service Institute, Whitehall, Mr. Wentworth Shields presiding in the absence, through indisposition, of Mr. W. T. Hatch, who was to have presided.

The Chairman said he should like to announce that the membership had now reached the satisfactory total of 740. He thought that that showed not only that the Institute was doing good work and supplying a need, but also that members of the various professions were recognising the fact.

In calling upon Mr. H. K. G. Bamber, F.C.S., to read a paper entitled, "Some Notes Relating to the Setting of Portland Cement, with Description of Methods Adopted for Regulating the Same," the Chairman said that there were few or none of them who did not know of the splendid work Mr. Bamber had done on the subject of Portland cement.

Mr. Bamber said he wished to give the members of the Institute a short *résumé* of some of the results of research work in this direction done by manufacturers and others, more especially as applied to the more modern methods of manufacture. He purposely gave the practical side of the question the pride of place, as the interests of the members of the Institute, and in fact all users of cement, were more concerned with this branch of the investigation than with the other. It was well known that for the best cement the total percentage of lime (CaO) present, as found by analysis after decomposition of the various silicates and aluminates by solution and subsequent separation, was confined to very narrow limits—*i.e.*, 63·5 to 65 per cent. The amount of silica (SiO_2) varied from 21 to 22·5 per cent., and alumina (Al_2O_3) from 5 to 6 per cent., so that whether the ratio of lime to silica was calculated on a percentage basis or in accordance with chemical equivalents it approximated 2·8 parts lime to 1 part silica, the formula for which, without assuming any definite combination, might therefore well be written as $3CaO\ SiO_2$, leaving approximately the lime required in combination with alumina to form dicalcic aluminate, and any attempt to vary this ratio to any extent resulted in a material which had not the good properties of, and could not be designated as, a true Portland cement. The percentage figures he had mentioned of 63·5 to 65 per cent. of lime might appear to many who were accustomed to the old specifications for cement, placing a maximum of 61·5 per cent. for lime, to be high, but many analyses of pure clinker taken from such kilns as were used for the old methods of manufacture, and which were presumably producing cement within that apparently low limit, showed that for years the higher figure had been the percentage in all good cement clinkers, the actual fact of its presence in such quantities in the ground cement in part being cloaked by the accidental introduction of extraneous foreign matter derived as an uncombined residue from the fuel used for calcination. These facts were mentioned, as they had an important bearing on the setting properties of cement.

Like the constitution of Portland cement, the theories as to the setting were also somewhat vague and uncertain; but it was generally assumed that the action was brought about firstly by the hydration upon the addition of water and subsequent crystallisation of the calcium aluminates present, which occurred with great rapidity, constituting what was known technically as the "initial set," causing cohesion of the mass of cement and the intermingled aggregate. This was followed by the hydrolysis of the calcium silicates, the latter being slowly decomposed and broken down into the more simple form of mono-calcium silicate, with the consequent liberation of calcium hydrate ($Ca\ OH_2$), which being in excess of that required to form a saturated solution partially crystallised out—this cycle of operations continuing over long periods during the hardening of cements.

These, then, were the hypotheses, correct or incorrect, which guided the cement manufacturer embarked on a field of investigation, or with which he endeavoured to explain the various phenomena which presented themselves from time to time during the course of manufacture.

A thoroughly well-made Portland cement clinker, ground to normal fineness, was always very quick-setting, almost equal to that of plaster of Paris, but this property of rapid-setting could be somewhat delayed by mixture of other foreign substances, as was done accidentally until recent years, and in fact yet continued, with cement manufactured on the intermittent kiln system, now being rapidly superseded. By this method dry material of uniform and correct composition was calcined by mixture with from 40 to 45 per cent., or even more, of its weight of coke and coal, the ash from the fuel—about 12 to 15 per cent. of the weight of the fuel used—remaining mixed up with the calcined clinker. In most cases this foreign matter alone had the effect of prolonging the setting time some few minutes, but portions of the clinker removed separately and free from the fuel ash when ground to powder set almost instantaneously upon the addition of water, with disengagement of considerable heat due to the rapid chemical action.

It was difficult satisfactorily to explain why the admixture of the fuel ash should have the effect of retarding the setting time somewhat, unless it was that it contained an amount of sulphates derived from the oxidised sulphur compounds originally present in the fuel used, and these sulphates having a similar effect on the cement as the addition of a similar amount of gypsum—or it might be that owing to the less perfect burning of cement in the past cement always contained free lime in the amorphous, as distinct from the crystalline condition—this lime being quickly dissolved in the water used for gauging, which, becoming saturated, prevented the solution of the calcium aluminates, and thus somewhat retarded the set.

During recent years, and upon the introduction of new methods, more particularly that of the rotary kiln, none but this pure character of clinker was produced, containing practically no free lime in the amorphous condition—the system being such that the ash from the fuel, the latter in quantity being in itself at least 33 per cent. less, to a very large extent passed away with the effluent gases from the kiln. This also applies largely to the sulphur compounds in the raw material and coal, which, being decomposed, passed out of the kiln as sulphurous acid with the other gases. The clinker thus produced was practically pure, and resembled those portions of picked uncontaminated clinker from the intermittent kiln previously referred to, and, like that, had, when finely ground, an almost instantaneous set, and with a lime content on analysis in both cases ranging between 64 and 65 per cent. It was thought that cement manufactured by the rotary process had a quicker initial set when untreated with any addition for the purpose of retardation than had the cement made by the older process, but this had been found to be an entire fallacy, since it was found that the pure uncontaminated clinker from an intermittent kiln was equally as quick setting as the pure clinker from the rotary kiln, the similarity being cloaked by the presence of the foreign matter from the fuel in the older process cement.

The realisation of these facts was not apparent in the early days of the more modern methods, and the manufacturer was faced with what appeared to him at first to be a new difficulty, whereas in reality it was the obvious result of the more careful production of a pure material, which he had been accustomed formerly to manufacture, accidentally in a more or less contaminated condition. In ignorance of the above facts it was thought that perhaps the rapidity of the modern manufacturing process—more particularly the cooling down from the higher ranges of temperature of the calcined clinker, which was accomplished in a few minutes after reaching the maximum temperature—might be the cause of the apparently more chemically active condition of clinker manufactured by the rotary process; and very elaborate and costly experiments were carried out, extending over a long period, in which the calcined clinker after passing the clinkering temperature was kept at a red heat for a considerable time before final cooling, imitating, it was thought, the slower action of the old intermittent kiln process.

Unfortunately—like many others—this experiment, although carried out on a practical and commercial scale, either through the difficulty in regulating the supplies of clinker to insure a steady temperature of cooling, or through mechanical difficulties which the operation presented, was of a negative character. Previous laboratory experiments in this direction had given great promise that more useful results might have been obtained, and undoubtedly indicated that during the calcination of cement clinker there are critical points of temperature of great importance, and well worthy of the careful study of the scientific specialist. Experiments were also carried out to test the concentrated action of carbonic anhydride upon these various aluminates, this being the principal ingredient in the atmosphere which, together with water, brought about the natural process of aeration of cement. It was found that the aluminates containing the higher proportion of lime were less affected by this treatment with CO_2 than the lower aluminates, which it was thought might be the explanation why rotary cement was less affected by exposure to the atmosphere than cement made in intermittent kilns. A very considerable amount of research work was done under the author's supervision in connexion with the properties of the various calcium aluminates, to which the quick-setting property of Portland cement was attributed. As already explained, it was thought that the more rapid cooling of the clinker probably had some chemical or physical effect on the aluminates present, and in order to test this theory the dicalcic, tricalcic, and tetracalcic aluminates were synthetically prepared in order if possible to test their setting properties individually when rapidly or slowly cooled from the state of fusion. Unfortunately, such investigations were replete with difficulties, and it must not be forgotten that in examining these isolated components of cement their assureed properties when in a pure state might be entirely altered by the presence of other ingredients in cement reacting one upon the other. On the whole, the results in this line of research were of a negative character, but the author mentioned this series as one of many such experiments carried out to indicate the highly scientific class of investigation the cement manufacturer was prepared to undertake to obtain a further knowledge of the properties of the material the manufacture of which was under his control.

Attempts had also been made to reduce the quantities of aluminates present by adjusting the composition of the raw materials, by increasing the silica content at the expense of alumina; but here again only partial success was met with, as it would appear that even small proportions of calcium aluminate present were sufficient to cause a very rapid initial set of the whole mass—in fact, as far as the author was aware in no case, even where the raw materials were such that the calcined clinker contained a high percentage of silicates and a low percentage of aluminates, was the initial set of such cement, untreated with retarders, other than very rapid—in fact, almost instantaneous. In order to avoid the necessity for the addition of gypsum to the calcined clinker, which until water was added to the cement was present only as a mechanical mixture, it was thought that this addition might be made to the raw material previous to calcination, during which operation it might become evenly incorporated with the whole mass of clinker, but in practice this was found to be quite inoperative as at the maximum temperature of the kiln in the presence of silicates, etc., gypsum incorporated with the raw materials was decomposed, the sulphuric anhydride (SO_3) being evolved and passing out of the kiln with the other gases, the remaining life (CaO) combining with the silicates (clay); the added calcium sulphate in this case only having the same function as the calcium carbonate present, which gave up its carbonic anhydride (CO_2), which escaped from the kiln, leaving the remaining calcium oxide (CaO to combine with silica) and alumina (clay). Various other suggested methods of prolonging the setting time of cement without having recourse to the mechanical addition of retarders to the finished cement had been attempted, such as the injection of solutions of the alkalies and alkaline earths, and such like, upon the hot clinker during its passage through the cooler, but all these had met with only limited success, the results obtained being in many cases evanescent, and in others creating further mechanical difficulties in the grinding of the clinker, which render such processes physically and commercially undesirable.

At the end of the XIXth century practically all the cement manufactured in the United Kingdom and in Europe was produced by the old method of calcination in intermittent or somewhat similar kilns, the product being a clinker having various degrees of hardness, ranging between the material thoroughly calcined at a temperature above 2,800° Fahr. (at which temperature a thorough chemical combination has taken place), and the material technically known as "half-burn," which latter was practically the raw material from which only the carbonic anhydride of the chalk or limestone and the water of hydration and organic matter of the clay had been expelled. Now it was quite easy to realise, seeing the very complex character of the chemical combinations which were thought to take place at the true temperature of calcination, how difficult, and in fact almost impossible, it must be to determine a formula which will correctly represent the chemical composition of even a uniform raw material calcined under such a wide range of temperatures as that represented by 2,800°—900° Fahr., at which latter temperature the volatile matters from the raw materials were expelled. It was equally easy to realise that the physical conditions, and therefore the setting properties of the atoms forming this heterogeneous mixture, must be of a very varying character, depending largely upon the relative proportions of the heavy or more lightly-burned clinker, or that of an intermediate character, present in the mass as removed from the kiln; the more heavily-burned portions were considered the most valuable, more especially those portions of clinker which had not been contaminated with or fused by contact with the siliceous matter contained in the ash of the fuel; and the product of the present-day rotary kiln, calcined in small particles at a uniform temperature and in the absence of fuel ash, consisted, as one would expect, almost entirely of this pure clinker. The only methods known to the ancients of retarding the setting time of this heterogeneous mixture of silicates and aluminates was by exposing such cement after grinding to long periods of aeration or by the addition of gypsum in one form or other.

The first process was only successfully applicable in the absence of added gypsum, and the effect of prolonged aeration of such cement was the absorption by the uncombined lime and the loosely combined silicates and aluminates, etc., of water derived from the moisture in the atmosphere, and subsequently carbonic anhydride from the same source. In this manner a considerable quantity of the material became carbonated and inert, depriving the cement of a not inconsiderable portion of its former chemical activity and thus causing a prolongation of the setting time. It would be seen that such method must be most imperfect in its action and required a considerable length of time to enable the moisture and the carbonic anhydride in the atmosphere to find its way into the interior portions of the heap, by which time the outer portions would be considerably over-aerated and become practically inert. It would seem that the action of the atmosphere was confined to the loosely combined or lightly burned particles of the cement and that the thoroughly calcined particles were little affected by exposure to the atmosphere at normal temperatures, and this experience seemed to be confirmed from the fact that cement manufactured by the rotary process, producing the pure clinker, when ground without treatment or additions to retard the setting time, would retain its original quick-setting property unimpaired for long periods when stored in bulk. Instances of this had occurred where cement having an almost instantaneous set at the time of manufacture had retained this property when kept in bulk, but otherwise, exposed to the atmosphere, for a period of two years. It would be seen from this that the old method of simple aeration in bulk to retard the setting time could not be applied with any degree of the former success to the product from the rotary kiln, and this would also seem to be evidence that the cement manufactured by the more modern process was of a much more stable and reliable character than that formerly put upon the market. A cursory examination of the clinker produced by the two methods would, even to the uninitiated, be sufficiently convincing on this point.

In view of the fact that this simple method of aeration in bulk could not be successfully applied to cement manufactured on the new system, many attempts were made to accomplish the most important part of natural aeration, *i.e.*, the absorption of water, by artificial means, such as passing the ground cement through a moist atmosphere, or by blowing moist air through the cement in bulk. These methods, however, were not found to be wholly successful, firstly, from the physical and mechanical difficulties which presented themselves by reason of the partial setting of the finest portions of the cement, with the consequent blocking of any apparatus used for the purpose, such as revolving drums, distributing discs, conveyor screws, and scrapers, and the like; and secondly, in the author's opinion, for the much more important reason that, in order to accomplish the desired result in a short space of time, it was necessary to submit the cement manufactured by the rotary process (all of which consisted of finely reduced particles of the pure calcined clinker) to a moist atmosphere at a comparatively high temperature, as distinct from the normal temperatures under which all the previous attempts at artificial aeration had been carried out. In order that this might be accomplished, and the cement submitted to a moist atmosphere at a high temperature, in which the action of the water vapour upon the particles of clinker might be rapid and effective, a process was introduced in which advantage was taken of the peculiar construction of the mills chiefly used for completing the reduction of the cement to a fine powder in enclosed revolving cylinders, known in the trade as "tube mills," which contained as their grinding media a heavy charge of steel balls or flint pebbles.

The cement introduced into these mills for the purpose of finishing was in a coarsely-ground condition, having previously been dealt with by some form of preliminary grinder, during which process, owing to the friction entailed, the temperature of the material was raised to a point ranging between 140° and 160° Fahr. The friction due to the action of the attrition of the steel balls or flint pebbles against themselves, the sides of the mill, and the passing cement, caused the temperature in the tube mill to be still further increased, and it was at this point where moisture was introduced in the form of a regulated supply of steam, which still further increased the temperature and enabled it to be maintained at a point above 180° Fahr., preferably about 200° Fahr., at or above which temperature the operation is most successfully conducted, and the cement operated upon was made to take up uniformly throughout an amount of water, in practice about 1 per cent. or a little under, with which it combined chemically, and which could not be expelled except by ignition. The thoroughness of the process will be realised when it was understood that the time

of passage through the tube mill was about two hours, and that each particle of cement was being continuously submitted for that period of time to a moist atmosphere acting upon its surface, which latter was removed by the attrition of the balls or pebbles, exposing a fresh surface upon which a similar action took place, until the whole left the mill at a temperature which had been gradually increasing until the operation was complete. In this way the operation of exposure to moisture was accomplished at a temperature above the critical point necessary for the purpose, and in such a manner that no mechanical difficulties presented themselves in the blocking of the machinery or apparatus. The facts mentioned in reference to the importance of carrying out the process at or above a certain temperature were not generally known.

Now let them return to the other method of retarding the setting time known to the ancients, *i.e.*, the addition of gypsum to the product of the intermittent kiln during or after the process of grinding. With this class of cement, containing already sulphates equivalent to about 1·5 per cent. SO_3, derived, as previously stated, from the sulphur compounds in the fuel, it was generally sufficient to add 1½ per cent. of gypsum to obtain a slow-setting cement; the effect, however, in most cases was only transient, as it was well known that the effect of aeration, even when the cement was packed, almost invariably resulted in such cement returning first to its original quick-setting condition before subsequently becoming slow setting, and largely inert through excessive exposure to the atmosphere. This peculiarity of cements slowed by gypsum had been the cause of much difficulty to the manufacturer, and many conflicting theories were propounded as to the cause of such reflex action. A slow-setting cement containing 0·95 per cent. of SO_3, of which only 0·35 per cent. was added, retained this property of slow setting for long periods in commercial packages, as it was also known to do when stored in bulk. It was difficult to give any definite chemical or physical explanation of the fact that the presence of as little as 1 per cent. of combined water in cement, which had been taken up at a high temperature, should not only in itself have the effect of appreciably slowing the setting time, but that when present in conjunction with even small percentages of gypsum the slowing effect of the combination was maintained. The presence of 1 per cent of combined water had also an enormous influence on the action of cement when tested for soundness under the boiling test, more particularly under the method invented by Le Chatelier and now usually adopted, by which method and with which apparatus it was thought the actual expansion of the cement could be measured. By means of the steaming process described the proportion of gypsum required to be added to produce a slow-setting cement was much reduced, and if advantage were taken of the greater solubility of plaster of Paris ($CaOSO_3\ \frac{1}{2}H_2O$) over that of raw gypsum ($CaOSO_3\ 2H_2O$) the quantity of SO_3 introduced into a cement might be reduced to a minimum.

The author had referred to this subject on former occasions. Inasmuch as the effect of gypsum in retarding the initial set of cement depended upon the rapidity of solubility in the period immediately after the addition of water, and the quantity that could quickly be brought into solution (in which condition it was alone active), it followed that the form of gypsum having this property most developed would be the most effective. The quantity required to produce like results when plaster was used might be one-third less than with gypsum, and this was important in view of the known defect produced by the addition of gypsum to cement, more especially if the cement was to be deposited under water (more particularly sea-water) before setting commenced. Le Chatelier, in a paper read at the meeting of the International Testing Association at Brussels, describing the behaviour of cements in sea-water, said, "By introducing important quantities of calcium sulphate into hydraulic cements, it is possible to bring about their disintegration at more or less rapid speed; and as a rule destruction proceeds faster when the material is in the sea than when it lies under fresh water." It was important, in view of the chemical action which was said to take place between the added sulphate of lime (gypsum) or the soluble constituents of sea-water, with the aluminate of lime in the cement, forming a compound said to be sulpho-aluimnate of lime, that the amount of added gypsum should be kept as low as possible. The action referred to by Le Chatelier was continually in evidence with all cements to which more than 2 per cent. of gypsum had been added to retard the setting time, when such cements were tested by the accelerated methods for determining the ultimate soundness, more particularly when they were subjected to the primary stages of that quantitative boiling test, which appeared in most specifications, introduced by Le Chatelier himself and which bore his name. This test was designed with the object of detecting rapidly any inherent unsoundness in cement, so that a knowledge as to the constancy of volume of any cement might be obtained previous to its use in the work. To those who had much experience in the orthodox working of this apparatus it was apparent that the conclusions drawn might frequently be entirely fallacious, and many perfectly sound cements thereby rejected, while others of doubtful quality for certain conditions of work were not detected. In adopting this test the fact seemed to have been entirely overlooked that many cements, more especially those containing over or about 2 per cent. of gypsum, were found to expand considerably during the primary immersion in cold water and might show but a slight further expansion during the second, or boiling, stage of the operation. Such cements would be passed as satisfactory by this test, and no doubt many would prove to be so, if allowed to harden before immersion in water. It would seem, however, that as at present conducted the test entirely failed to detect (unless a record of the expansion during the cold-water immersion was included) a cement containing an unsafe percentage of gypsum, which cement might be required for work where the concrete was of necessity deposited under water immediately after gauging. The period of immersion before boiling stipulated in the Le Chatelier test was a very important factor in affecting the results, and appeared to be entirely arbitrary. It might be that certain cements, perfectly sound in cold and in boiling water, and especially those of a very slow-setting character, would fail to pass if boiled twenty-four hours after gauging, whereas at thirty-six or forty-eight hours, or even longer, the results might be perfectly satisfactory.

Now as to the causes of expansion of certain cements when boiled, this might be due to (1) an insufficient reduction and amalgamation of the raw materials; (2) incomplete or irregular calcination; or (3) a predominance of small unground particles of clinker in the finished cement. The Le Chatelier test was designed to guard against the results of such irregularities in the course of manufacture, and as regards points 1 and 2 was useful and effective, as unsoundness due to either of these causes might subsequently develop, causing disintegration. The expansion under these circumstances was probably due entirely to chemical causes, resulting either from unbalanced proportions of the raw materials, possibly also in an unsuitable mechanical condition, refusing to form during calcination a chemical combination of the same uniform character as would be the case if chemically balanced and thoroughly amalgamated; or, given a satisfactory raw material in all respects, the expansion on boiling might be due to the fact that during calcination the raw material, either wholly or in part, might not have been brought up to the requisite temperature at which the principal compounds constituting Portland cement were formed. The expansion, however, due to the third cause, *i.e.*, the presence of unground particles of well-manufactured clinker, came under a different category, for the material causing expansion was of identical composition, and having the same chemical and physical properties as the finer-ground portions of the cement, which latter, *per se*, were entirely free from expansion when boiled. The cause in this case was rather more of a physical character than a chemical one, although it must be admitted that the hydration of the particles of clinker at the high temperature, which in the author's opinion was the cause of the expansion in this case, was a chemical process. It was evident that the mere reduction of the clinker to a fine powder did not in any way change the chemical composition of the cement, and if any difference was noticeable under the Le Chatelier boiling test between a finely-ground and the same coarsely-ground clinker, the former being perfectly sound and the latter showing expansion, this expansion must be due to the action of the water at a high temperature on these particles. In the author's opinion the conclusions drawn from the results of tests under the Le Chatelier method, brought about through this latter cause, might be misleading, because it was assumed that these particles causing expansion consequent upon hydration at a high temperature would equally expand at normal temperatures, which had yet to be proved. From experiments it would appear that the larger particles of clinker remaining even in a commercially finely-ground cement, which were hydrated with expansion when in contact with boiling water under the Le Chatelier test, were also hydrated, and perhaps also with expansion, by contact with steam at a high temperature, although in a comparatively dry condition, during the process of grinding. This would seem to be the logical reason of the fact that while cement manufactured from clinker chemically well balanced and thoroughly calcined would expand when submitted to the Le Chatelier test, it would not expand under the same conditions if it had been previously treated by the hydrating process. Attempts had been made to use other materials for regulating the setting time, such as calcium chloride, sodium carbonate, etc., but as far as the author was aware these methods have not proved commercially successful. At the present time the processes employed were practically confined to watering the clinker, hydrating by means of steam during grinding, and the addition of gypsum. With these methods individually, or with a combination of same, cement could be produced having setting times suitable for all requirements.

Although the methods described made it possible to produce cement with definite setting properties, it must be remembered that the activity of the chemical process of setting was dependent upon the hygroscopic condition and temperature of the atmosphere or surrounding conditions under which concrete work was being carried out, a high temperature and a dry atmosphere tending to increase the rapidity of the set, and *vice versâ*. Some test indicating the change in the character of the setting time of cement due to temperature and atmospheric conditions, over which the manufacturer had no control, and which will always exist, were then referred to by the author, who thought their results should induce the engineer, architect, contractor, or other users of cement to supply the manufacturer with the fullest possible detail of the prevailing conditions under which the cement he purchased is likely to be used.

A discussion followed, in which Messrs. Bertram Blount, D. M. Butler, R. H. Stranger, Siegmund Rosenfeld, W. Lawrence Gadd, C. S. Meik, and G. M. Tourdi took part, and the discussion was adjourned.

JUNE 12, 1909.

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 19s. per annum, with delivery *by Friday Morning's Post* in London and its suburbs.

To Canada, post-free, 21s. 8d. per annum; and to all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum.

Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

MEETINGS.

JUNE 10-12.

The Association of Water Engineers.—Fourteenth annual general meeting, at Durham, under the Presidency of Mr. Robert Askwith, M.Inst.C.E., Engineer of the Weardale and Consett Water Company. The following papers have been promised for reading and discussion, viz.:—(1) "Steam-driven Pumping Plant for Deep Wells and Boreholes," by Mr. Alfred Towler, M.I.Mech.E. (2) "Working Results of Pumping Engines Operated by Producer-Gas," by Mr. D. Hastings Irwin, M.I.Mech.E. (3) "The Selby New Waterworks," by Mr. Percy Griffith, M.Inst C.E., and Mr. Bruce McGregor Gray, Assoc.M.Inst.C.E. (4) "Public Water Supply for Fire Extinguishing," by Mr. C. W. S. Oldham, Borough Water Engineer, Ipswich. (Also visit to Works; and on the 10th inst. fourteenth annual dinner.)

SATURDAY, JUNE 12.

Northern Architectural Association.—Visit to Chester-le-Street and Lumley.

Junior Institution of Engineers.—Visit to the works of the Menpes Printing Company, Watford. 3 p.m.

MONDAY, JUNE 14.

Clerks of Works' Association (Carpenters' Hall, London-wall).—Paper by Mr. F. J. Barnes on "Portland Stone." 8.15 p.m.

JUNE 15 to 17.

Institution of Gas Engineers (Institution of Mechanical Engineers).—Annual meeting.

WEDNESDAY, JUNE 16.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

FRIDAY AND SATURDAY, JUNE 18 AND 19.

Incorporated Association of Municipal and County Engineers.—Scottish District Meeting to be held at Arbroath. Report on by-laws, election of district secretary. Discussion on the following paper, which will be taken as read: "The Municipal Works of Arbroath," by Mr. Peter Chalmers Smith, Burgh Surveyor.

SATURDAY, JUNE 19.

Edinburgh Architectural Association.—Visit to Dunfermline.

Fifty Years Ago.

FROM THE *Builder* OF JUNE 11, 1859.

ARCHITECTURAL COPYRIGHT.

THE architect is employed to design, say an ordinary suburban residence—a work which cannot be remunerative to him on the established system of professional charges. It could be remunerative only on the supposition that the same design and drawings, with variations which he would readily introduce, could be turned to account in other houses to be built for the same description of demand. He will see, however, houses built to the very pattern, sometimes by the builder who had worked from his drawings; he will see his enrichments multiplied, and in unsuitable positions; and every time a degree worse in execution. At length he may be disgusted with his own work; and instead of having had the opportunity to effect those progressive improvements, through which would be realised the most satisfactory advance in architecture, he will become prone to extravagance, or variety without beauty, anxious less to improve upon what he has done, than to keep beyond his imitators. The new labour of design will have been saved to some one; or will have been charged for by the builder, without any return to the architect. In literature, such practice would in very short time stay the production of books, and bring to an end all that is good and noble in results from the labour of the pen guided by the intellect. It was the apprehension of such results more especially as regards England and America, which induced the demand for international copyright by authors of the respective countries. The rights of architects, and the interest of the public in the maintenance, form a case which is strictly analogous.

*** After fifty years, we seem to have at last got to some practical recognition that an architect has a property in his design. —ED.

OUR COMPETITION FOR A FOUNTAIN DESIGN.

THE announcement of a competition for the best design for a fountain for a public garden, which has appeared for several weeks among the announcements of competitions in our advertisement columns, has not we hope been overlooked by our younger readers. The full instructions were given (as stated in the advertisement) in the *Builder* of May 15, page 586.

The drawings are to be sent in on the 28th inst. The advertisement, therefore, will not now be repeated, but we take the opportunity of drawing the attention to it of any readers who may have overlooked it hitherto.

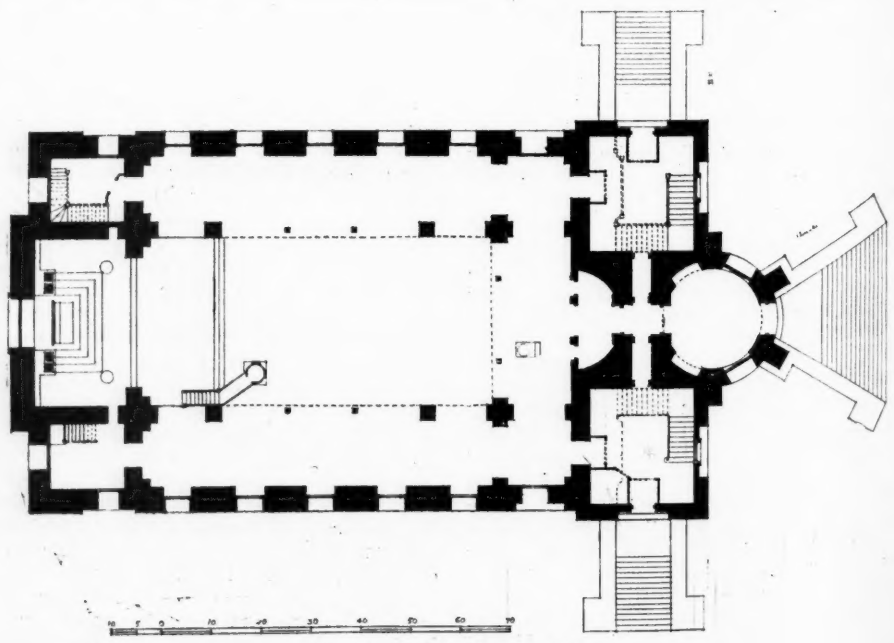
Illustrations.

ST. ANNE'S CHURCH, LIMEHOUSE.

THIS, which was one of the "Fifty Churches," was built in 1712-24, at a cost of 38,000*l.*, and consecrated on September 12, 1730, for a then newly-constituted parish, originally a hamlet of Stepney parish. The name is a corruption of "Limehurst," from "lymoste," or "lime oaste," a designation which survived in the name of Limekiln Dock. The rectory is in the gift of Brasenose College, Oxford. In the British Museum is a collection of twenty-five drawings and sketches, illustrating Hawksmoor's plans and designs. It will be observed that the turrets of the steeple resemble those he introduced in the quadrangle of All Souls' College, Oxford. The clock, by the Moores, 1839, has four dials 13 ft. in diameter above the belfrey windows; it is 130 ft. above the ground, the highest church clock in London, that of St. Paul's not excepted. On the morning of Good Friday, March 29, 1850, a fire consumed all the interior of the church, together with the organ built by Bridge, 1741. The work of reparation was committed to P. Hardwick & Morris, and in 1851-4 a sum of 11,000*l.* was expended. The new organ, by Gray & Davison, gained a prize medal in the International Exhibition of 1851. In 1857 P. C. Hardwick and Sir Arthur W. Blomfield completed the work, and rearranged the seating for 1,300 persons. In 1891 Sir Arthur W. Blomfield restored the edifice, and redecorated the interior at a cost of 1,800*l.* He removed the choir-seats from the west gallery into the chancel, made new windows to admit more light from the sides, and gilded and illuminated the sanctuary walls and ceiling.

The churchyard was laid out in 1887 at the charges, 820*l.*, of Miss J. Durning Smith. The adjacent church institute for the parish was built in Three Colt-street, in 1903-4, after designs, in the later Renaissance style, of Mr. W. Henry White.

St. Anne's displays all Hawksmoor's peculiar qualities in a very strong degree, while at the same time the detail is more strictly classical than was usual with him. The *motif* of the tower is very similar to that of its near neighbour, St. George-in-the-East, but the buttresses to the north and south are more pronounced; from the front these give a very solid and majestic effect, though some kind of finial is needed. The surmounting turret is very strange, but not unhappy. The recessed belfry window is an excellent feature. The voluteless Corinthian capitals should be noticed. The circular porch is the glory of St. Anne's. The glazing of the windows is done on the straight; the additional depth thus gained at the centre of the openings is responsible for a more pronounced play of shadow than would have been possible had the glass followed the curve of the walls. Touches like this reveal the master-hand. The inner dome is of stone, in which material the interior details are executed throughout. This portion of the building was comparatively unhurt by the fire; the gallery stairs to the south-west are the original oak ones.



St. Anne's, Limehouse. Plan.

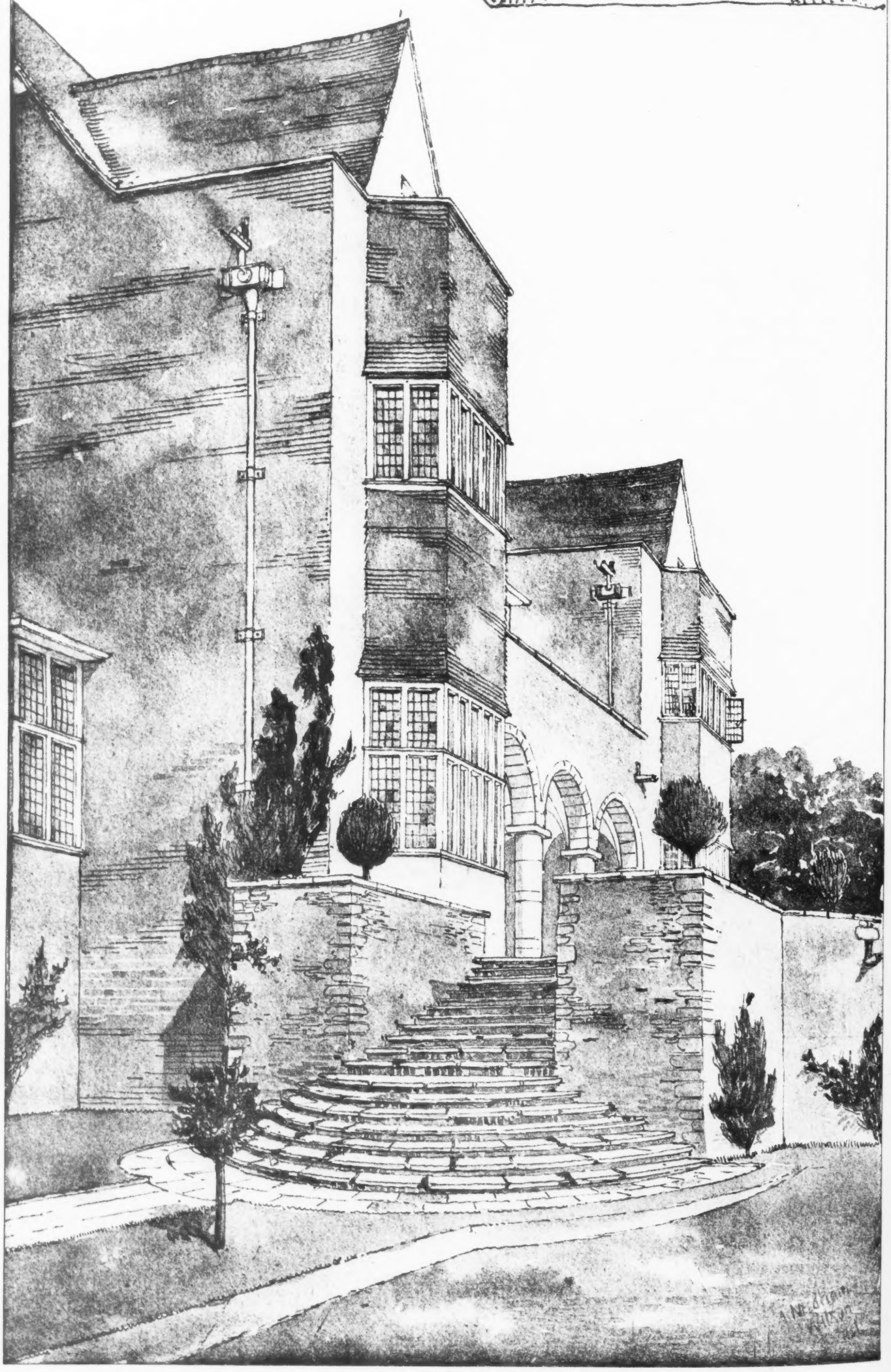
09.

rectory
Oxford.
tion of
, illus-
gns. It
of the
in the
Oxford.
as four
belfrey
ground,
that of
morning
a fire
church,
Bridge,
s com-
and in
pended.
ained a
ibition
and Sir
work,
persons.
red the
r at a
ir-seats
, made
om the
d the

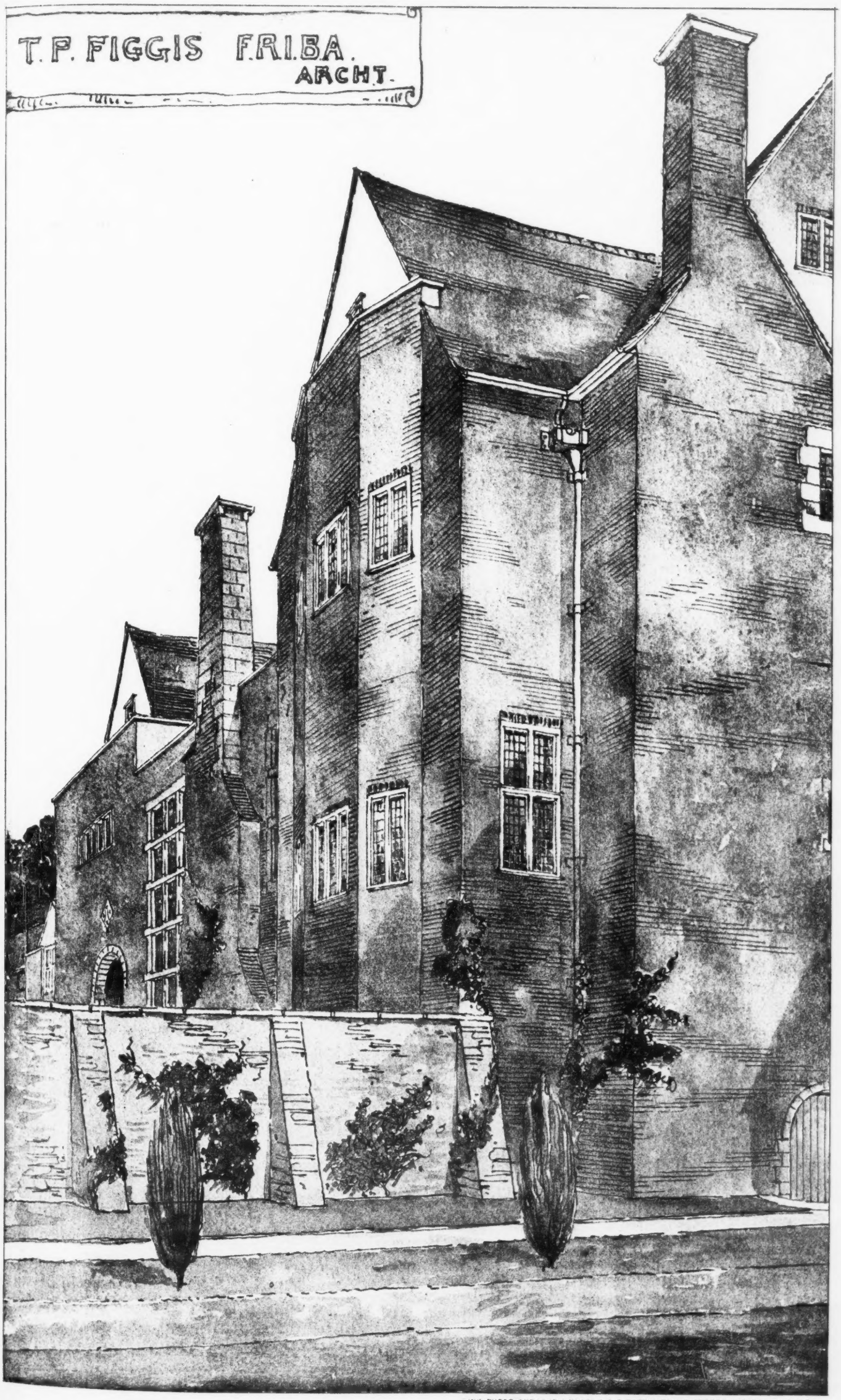
887 at
Smith.
parish
d, after
yle, of

moor's
legree,
more
n him.
o that
-East,
th are
e give
hough
sur-
t not
ow is
nteless
The
nne's.
n the
ained
nsible
than
glass
uches
inner
ne in-
This
ively
o the

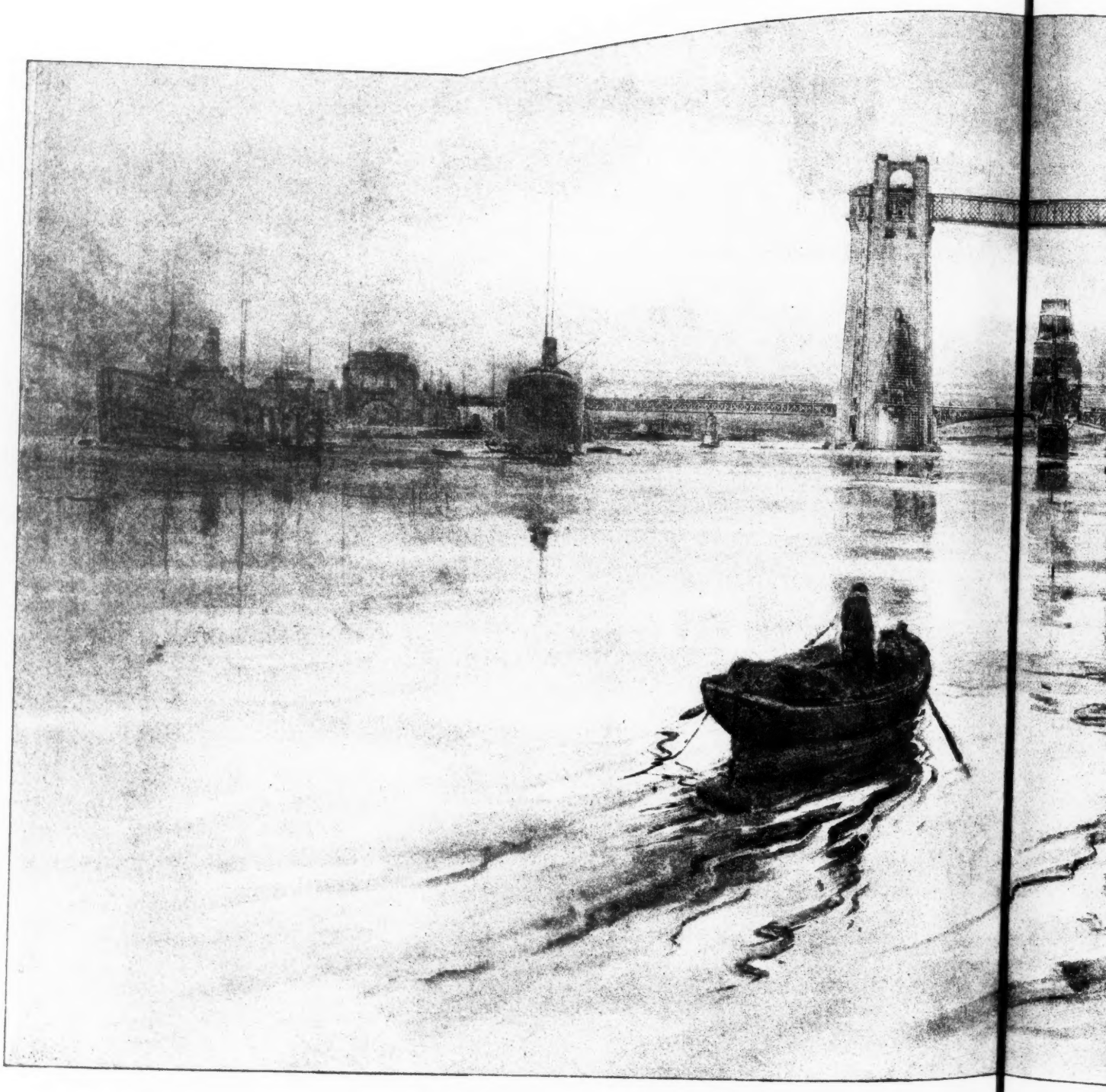
HOUSE AT BROMLEY KENT.



T. P. FIGGIS F.R.I.B.A. ARCHT.

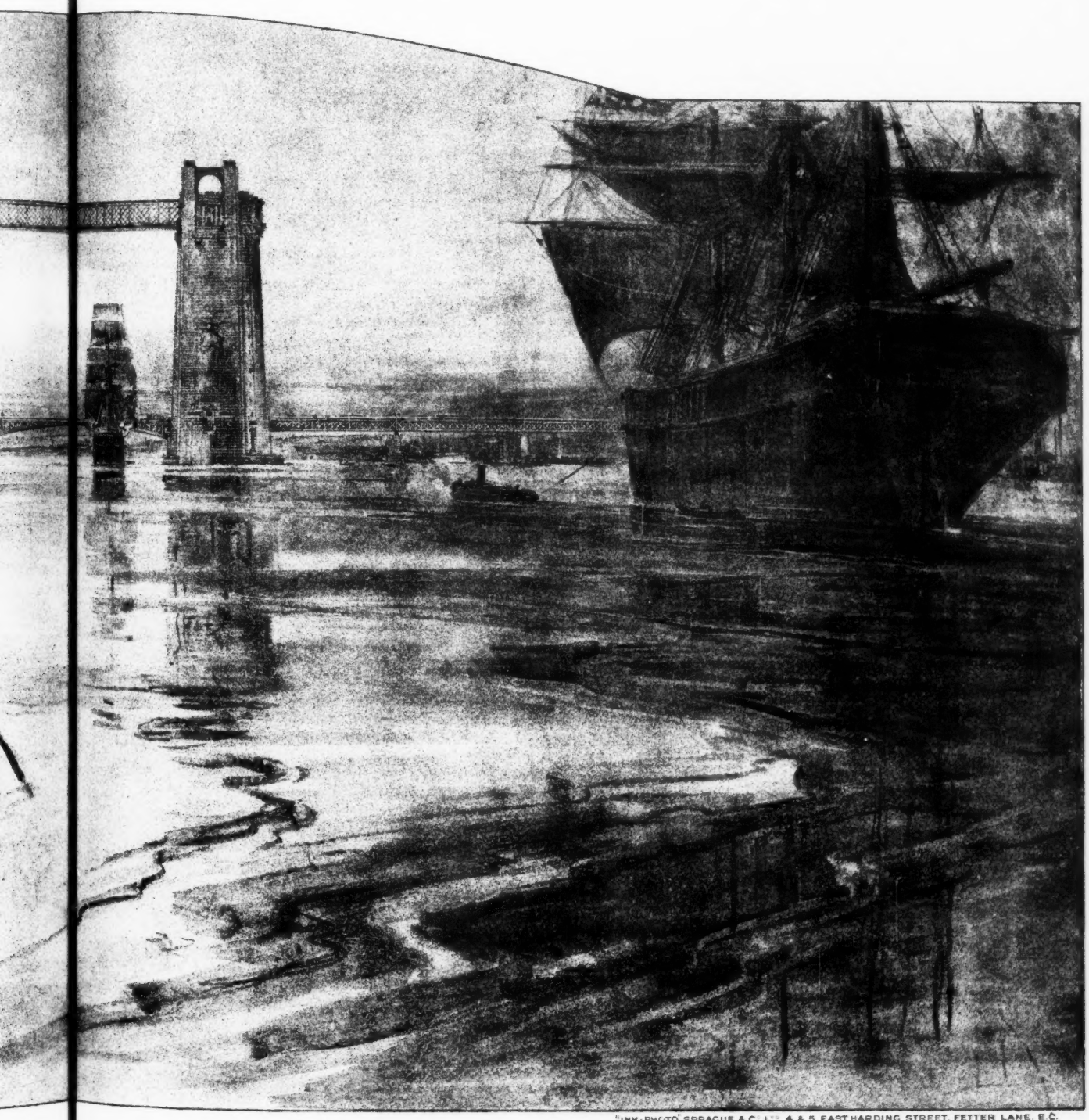


INK PHOTO. SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.



DESIGN FOR A BRIDGE FOR A COMMERCIAL CITY.—B

(ONE OF A SET OF DRAWINGS EXHIBITED AT THE



"INK-PHOTO" SPRAGUE & Co., LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

A COMMERCIAL CITY.—By M. Georges E. Piollenc.

DRAWINGS EXHIBITED AT THE PARIS SALON.)

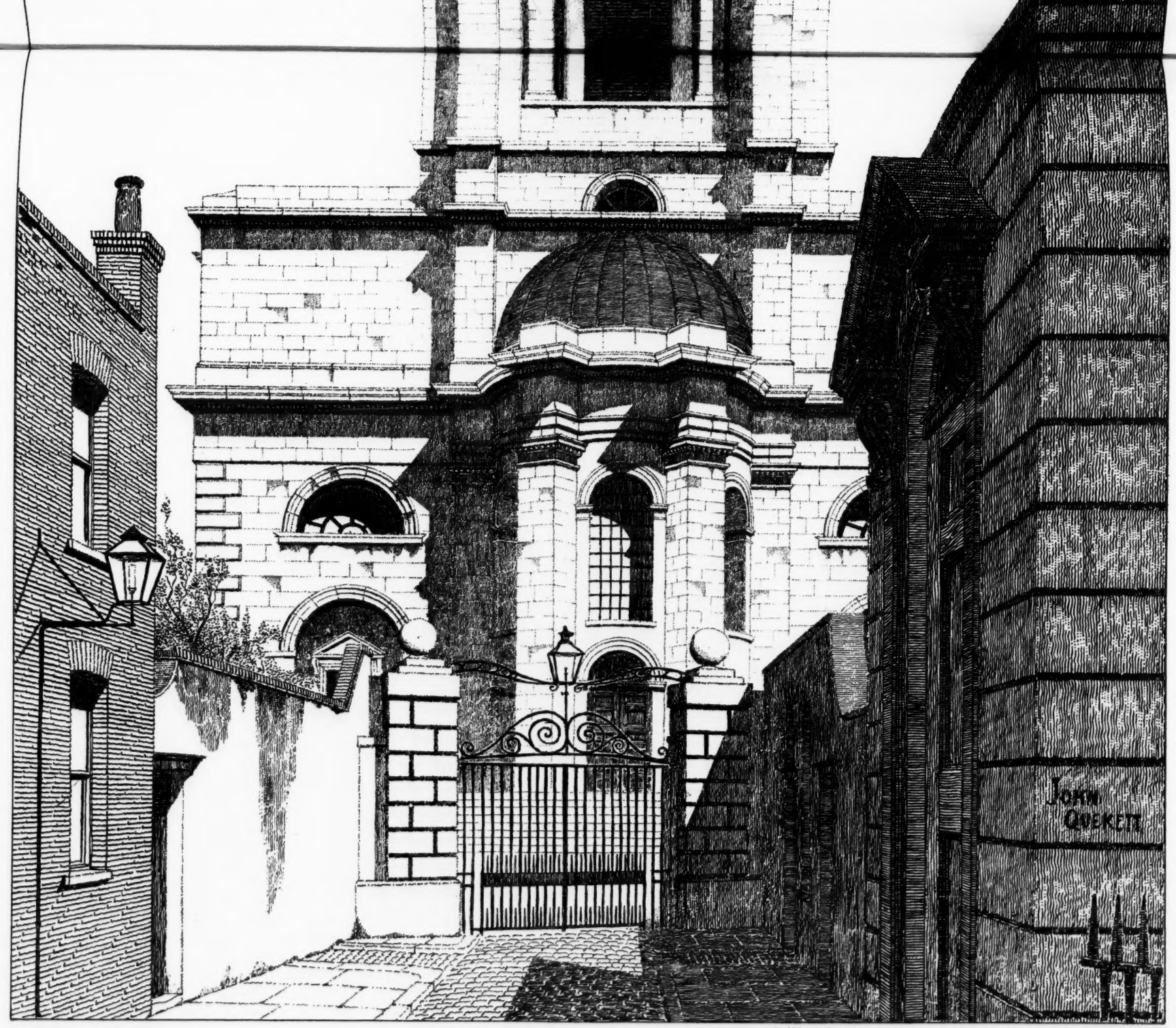
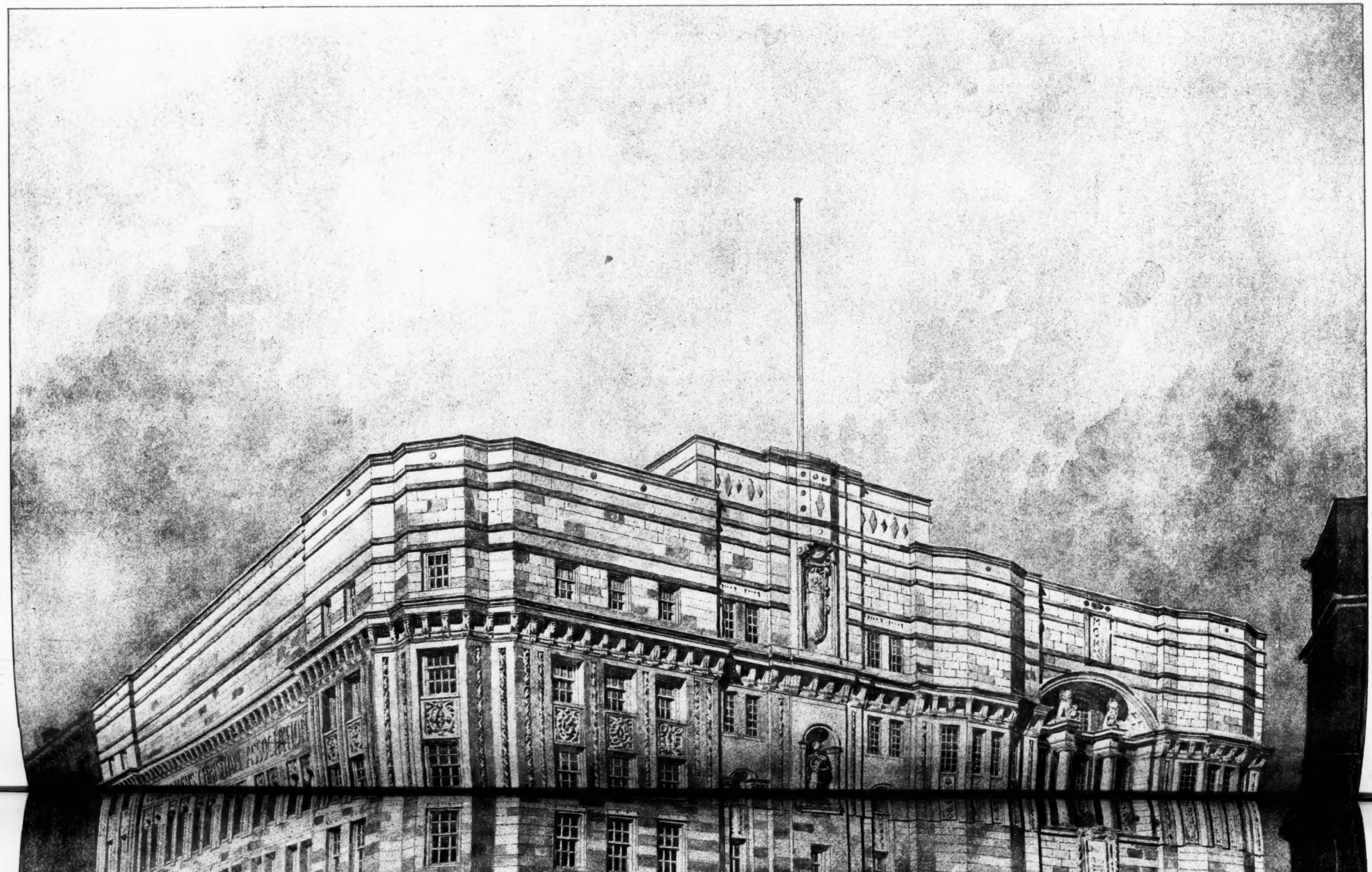


PHOTO-LITHO. SPRAGUE & CO. L.D. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LATE RENAISSANCE CHURCHES OF LONDON: VI.—ST. ANNE'S, LIMEHOUSE



JAMES SMITH
GIRLS' FLOOR
PUBLIC HALL
SHOP
STAIRS
GIRLS
SWIMMING BATH
GALLERY
FIRST FLOOR
LADIES
MEN'S CLOAKS
SMALL HALL
SPECTATORS' GALLERY
FOURTH FLOOR
LOCKERS
DRY SPECTATORS
FIFTH FLOOR
SHOWERS
SWIMMING BATH
GYMNASIUM
RUNNING TRACK OVER
BATH
JUNIORS
SMALL HALL
SHOP
AREA
GYMNASIUM
GLASS ROOMS
LARGE HALL
JUNIORS
YOUNG MEN'S CHRISTIAN ASSOCIATION MANCHESTER
WOODHOUSE, CORBETT & DEAN
ARCHITECTS
MANCHESTER
ROGER OLDHAM
DEL. 1913

DESIGN FOR A BRIDGE FOR A COMMERCIAL CITY.

THIS is photographed from a vast strainer some 9 or 10 ft. long, which formed the central drawing of a series of large drawings, illustrating the subject, which were in the Architectural Room at the Paris Salon, and were specially referred to in our article on "Architecture at the Salon."

Owing to the inevitable great reduction from the original drawing, the details of the design are rather lost; but the original drawing was such a fine and effective one, so broadly treated, that we preferred to reproduce it rather than a mere geometrical elevation.

The general character of the design of the bridge, however, can be understood even on this small scale, and its interest for us is that it treats just the same problem as that which was treated in the Tower Bridge, and shows, in our opinion, how the Tower Bridge ought to have been treated. There are here no useless ornamental details weakening the expression of the towers; they are great masses of rusticated masonry, and the semi-circular turrets which contain the staircases are placed so as to appear to act as buttresses to the towers and increase their expression of mass and solidity.

The author is M. Piollenc, a pupil of the well-known French architect, M. Deglane. The design is in all probability the result of an Ecole des Beaux-Arts competition.

YOUNG MEN'S CHRISTIAN ASSOCIATION, MANCHESTER.

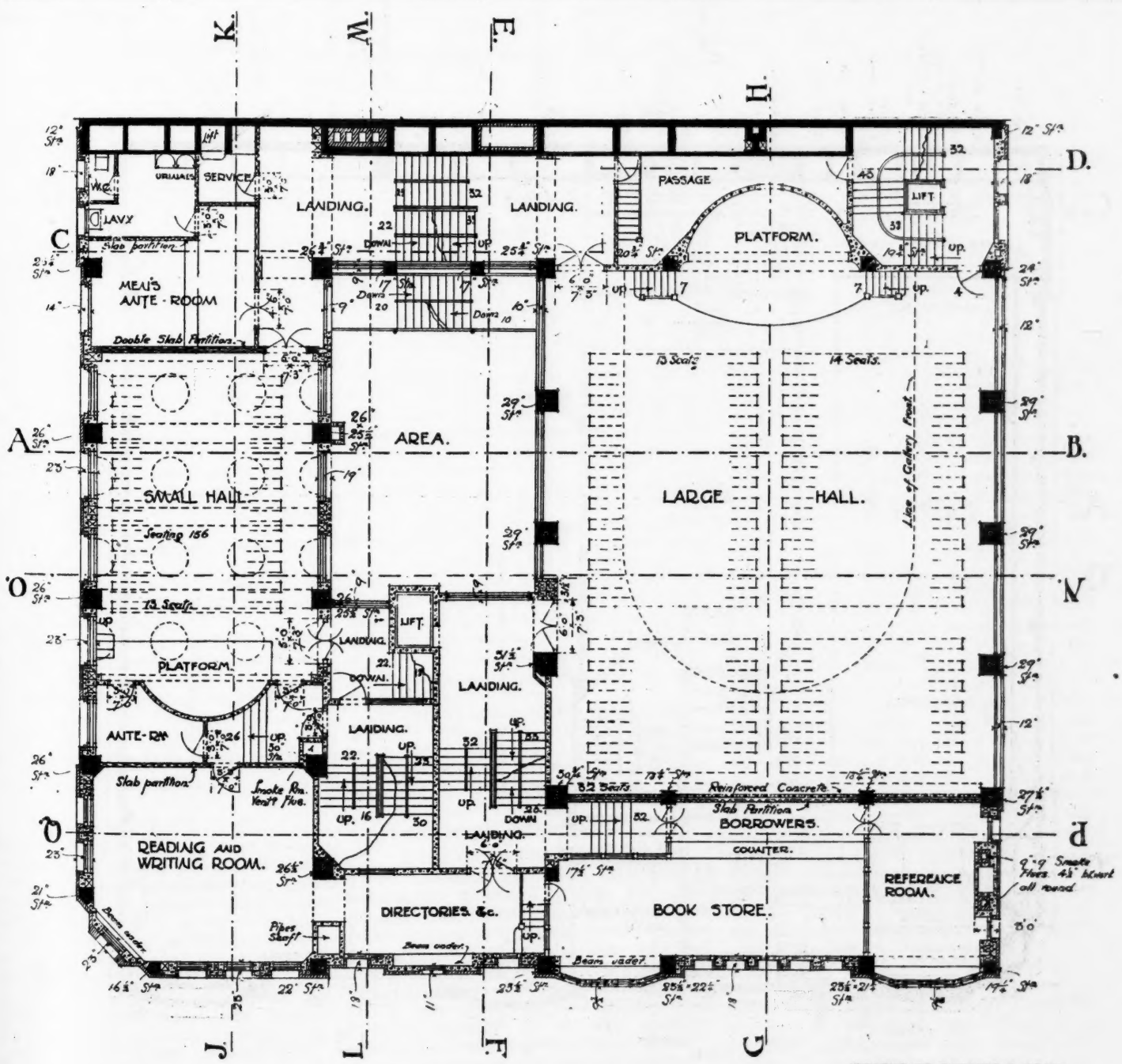
THIS building is now being erected, and provides, as fully as is compatible with rigid limitations of area and height, for the extremely varied religious, social, and athletic requirements of a modern Y.M.C.A.; a type of building in which there has hitherto been much more opportunity for development in the United States than in this country.

The somewhat novel, though not unique position of the 60-ft. swimming-bath on the fifth floor, in close connexion with the large gymnasium and twenty-four lap running-track, has considerable advantages of light and air, and enables the dressing-room and shower-bath accommodation to be used for either swimmers or gymnasts.

The large hall, to seat 1,000, can be used either as a part of the Association premises, or can be let off separately for concerts, etc., with separate public and artistes' entrances. Four separate exit staircases are provided from the large hall, each 6 ft. wide, and every important part of the building has at least two exits, an iron emergency stair being provided in the central area to get additional exits from the upper floors.

The entire building, including walls, floors, and stanchions, is of reinforced concrete on the "Kahn" system, the outer walls being faced with green and light cream-coloured Burmantoft's glazed terra-cotta, or "Marmo" ware. This facing is 4½ in. thick, and is built up a few courses at a time, the concrete then being shovelled into position behind it, and rammed into dovetailed recesses in the back of each slab of terra-cotta, thus permanently welding the glazed facing on to the structural concrete. In Manchester even a glazed material requires frequent cleaning, and provision is made for the support of cradles from which the whole of the walls can be washed periodically.

Although the swimming-tank, nearly 60 ft. above the street, affords a problem of some interest, the chief structural difficulty consists in the support of the two floors over the large hall, with a clear span of 52 ft. without columns. The floor immediately above the hall consists of classrooms, and



1ST FLOOR PLAN.

10 5 0 10 20 30 40

WOODHOUSE, CORBETT & DEAN.
ARCHITECTS.
MANCHESTER.
NOV. 1908.

Young Men's Christian Association Buildings, Manchester.

these are planned so that the divisions between them form trussed girders 11 ft. deep and 52 ft. span, supporting the class-room floors on their lower sides and the gymnasium floors on their top sides. The corridor, which cuts through the centre of these girders, necessitates special precautions.

The Royal Institute of British Architects' Report has been the basis for all calculations of strength, and an extensive series of compression tests on trial cubes of concrete has been carried out in order to select the best materials and proportions.

The architectural treatment of the exterior has no doubt been influenced by the facts that several preliminary designs were prepared before it was decided to adopt reinforced concrete for the walls, and that afterwards there was considerable uncertainty as to what thickness of walls would be approved by the Corporation.

These reasons partly account for some portions of the walls being considerably thicker than is actually essential in reinforced concrete, but it may perhaps be claimed that there is no very great objection to the use of some extra material to obtain good window reveals externally where desired, or to avoid awkward internal recesses; that, in fact, such treatment is a useful compromise between the thick wall design to which architects and the public are accustomed, and the entirely logical architectural expression of a thin wall construction which may probably be developed in the course of a few years. The minimum thickness allowed by the Corporation is 9 in., and most of the external walls are 9½ in. thick, including the 4½ in. of glazed terra-cotta; the thickness being increased where necessary in the portions acting as beams.

Almost the entire back wall consists of large exhaust-air flues, the divisions between them forming stanchions, and connecting flues ventilate the various rooms. Fans draw out the foul air, the inlets being generally through outer walls by ventilating radiators. The large hall has fans to blow the air in through screens and heating batteries, the fresh air intake being at the bottom of the arched recess between the oriel windows, 40 ft. above the street.

The original design was selected by the assessor, Mr. Thos. Worthington, in a limited competition, and has since been considerably revised.

The competition limit of cost was 35,000*l*., and tenders have been received within 200*l*. of that amount, including the cost of "Marmo" facing and several other special items not originally contemplated.

The contractors for the first (or "carcase") contract, including the reinforced concrete, are Messrs. J. Bentley & Co., of Bradford.

The contractors for the second (or "finishing") contract will be selected in a few days from those who have tendered.

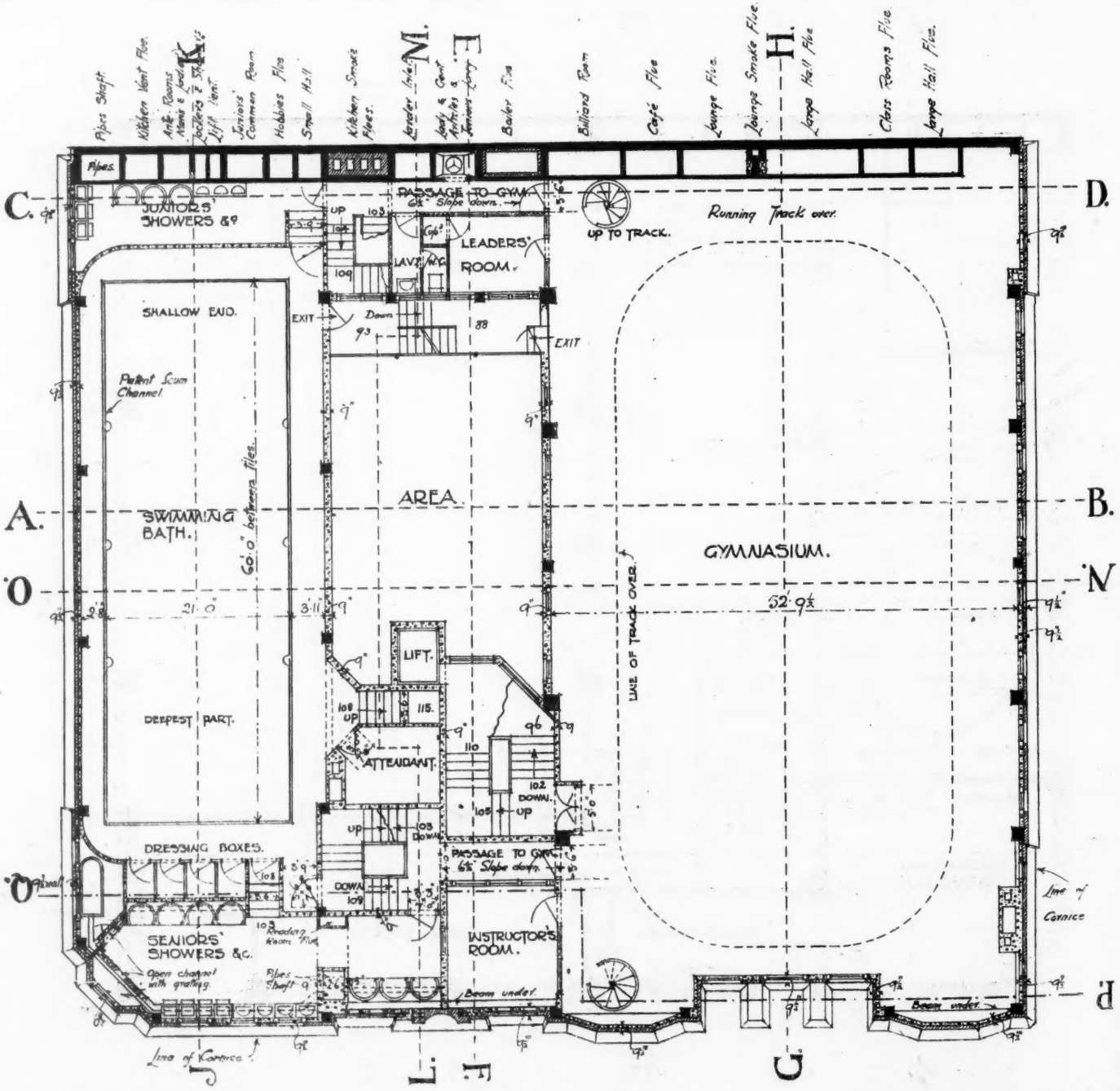
The architects are Messrs. Woodhouse, Corbett, & Dean, of Manchester.

HOUSE AT BROMLEY, KENT.

THIS house has been recently built on a sloping site at the corner of Mavelstone and Hill Brow roads, Bromley.

Four good-sized reception-rooms are provided on the ground floor, in addition to a hall and lounge, and nine bedrooms, dressing-rooms, and three bath-rooms on the upper floors. A special feature is the vaulted corridor on the ground floor, approached from the lower hall and giving access to the principal rooms.

The walls are faced externally with Lawrence's T.L.B. bricks in varied tones of colour; the dressings to porches and windows are of Ham Hill stone. The roofs are covered with dark brown Ashford tiles.

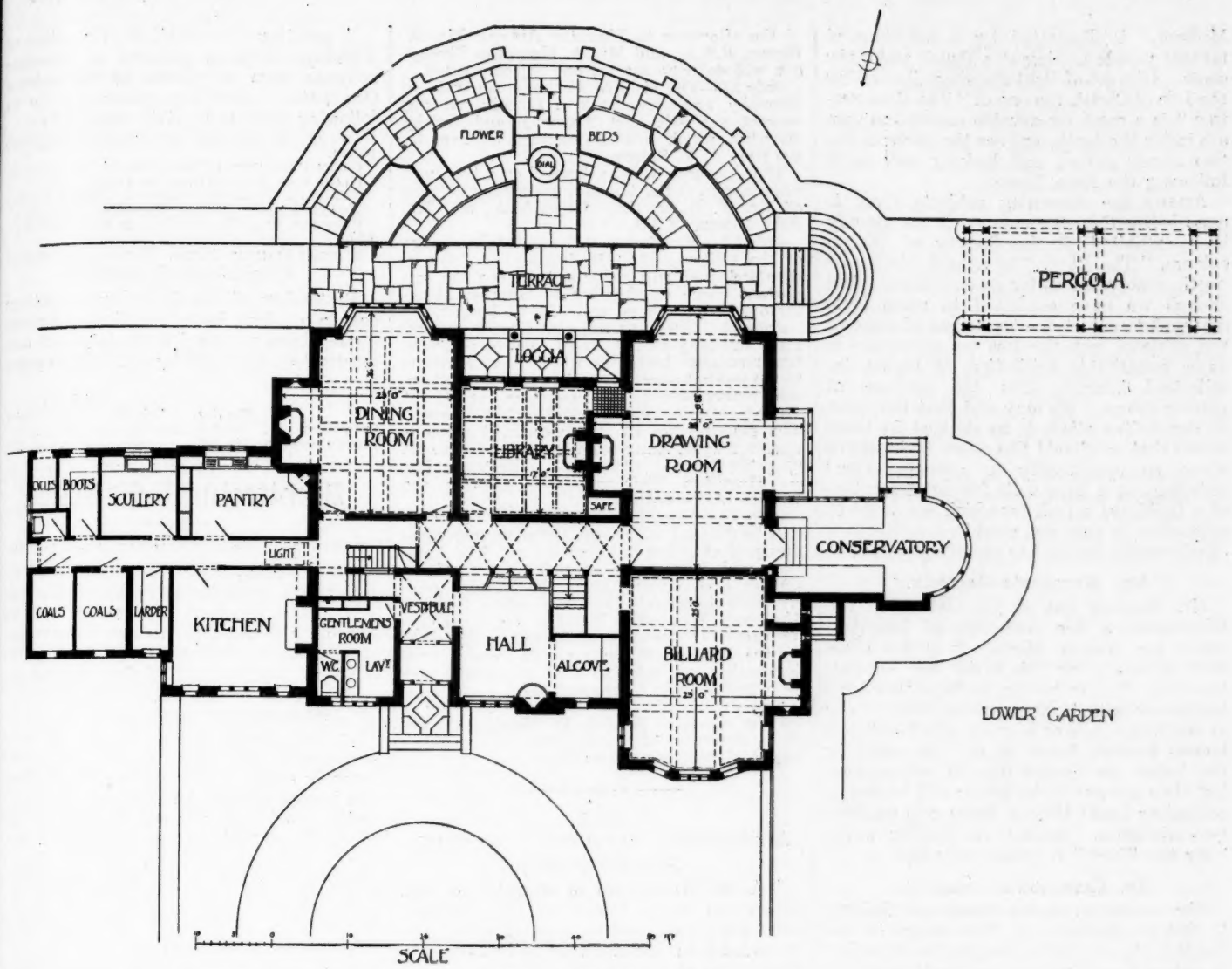


5TH FLOOR PLAN.

WOODHOUSE, CORBETT & DEAN, 100 KING ST, MANCHESTER.

10 5 0 10 20 30 40

Young Men's Christian Association Buildings, Manchester.



House at Bromley. Plan.

The casements are wrought-iron throughout, set in oak window-frames. The dining-room is panelled with Austrian wainscot oak, and the billiard-room in American whitewood.

The fittings of the library are of Spanish mahogany, and some interesting plaster decoration has been executed in the drawing-room by Mr. E. P. Bankart.

All the principal rooms are floored with oak wood blocks.

The general contractors were Messrs. W. J. Fryer & Co., of Paddington, and the same firm did the electric lighting.

The heating and boiler-work throughout was done by Messrs. Wontner-Smith, Grey, & Co.

The entire work, including the erection of extensive stables, and the laying out of the gardens and pergola, has been designed and superintended by Mr. T. P. Figgis, architect.

NOTES FROM FRANCE.

THE late M. Alfred Normand, the eminent architect, has left to the Carnavalet Museum, in Paris, some exceedingly interesting documents relating to the reconstruction of the Vendôme Column, which, it will be remembered, was demolished in 1871 under the orders of the Commune, and which M. Normand was subsequently commissioned to re-erect. The collection includes all the drawings and written memoranda relating to the work, as well as the wooden model of the scaffolding erected for the operation.

The works are shortly to be commenced for the prolongation to Saint-Germain of the Avenue de la Grande Armée and that of Neuilly. It will then be possible to progress from the Place de la Concorde to the terrace of Saint-Germain by one straight and wide avenue on which automobilists, cyclists, foot-passengers, riders, and a railway service will have each their own independent track.

The Municipal Council of Paris has had under consideration a scheme for a complete "dégagement" of the Halles Centrales. This improvement, which will cost about 20 million francs, has long been considered necessary in consequence of the obstacles to the circulation of traffic in the central portion of Paris. The Council has also been called upon by the Prefect of the Seine to undertake a series of important improvements, the cost of which will amount to about 800 million francs. Among these are included new school buildings (85 millions), new Mairies (25 millions), the laying-out of new squares (15 millions), and improvement of the Bois de Boulogne (5 millions).

The work of restoration of the main porch of Rouen Cathedral is at length completed. It has lasted fifteen years, under the successive direction of Government architects Sauvageot, Gosselin, Chaine, and Auvray.

PICTURE EXHIBITIONS.

THE DOWDESWELL GALLERIES.

THE announcement of an exhibition of water-colour drawings by Miss Fortescue-Brickdale in illustration of Browning's Poems was one to raise considerable expectations in the minds of those who are interested in the intellectual use of painting as the expression of thought. Of all artists of the day, we should have selected Miss Fortescue-Brickdale as the one specially capable of illustrating Browning; there is even a certain analogy between her painting and his poetry. In this sense, the collection of the Dowdeswell Gallery, highly interesting as it is, did not quite come up to our expectations, as illustrative work, for two reasons—there is a little too much mysticism and not quite enough personal beauty in the figures, in cases where beauty would seem to be required. For instance—

> "If one could have that little head of hers
> Painted upon a background of pale gold"—

pre-supposes that the head, in profile, is a thing of beauty; but in the painting it is not particularly beautiful, and the open mouth looks foolish; it is an admirable little bit of decorative painting, however. The one entitled

> "Is she not pure gold, my mistress?"

is a beautiful painting of a young lady standing in a wood, the foliage of which, painted in great detail, forms a background to her figure, but the face is not particularly beautiful; it does not seem to justify the rapture of the poem. Then in—

> "God has a few of us whom he whispers in the ear"—

why divorce the line from the grand associations connected with "Abt Vogler" and apply it to a little housemaid going about her work? It is a bathos. In some of the works mysticism is carried so far that it is rather difficult to realise what, in the artist's mind, was the relation between the poem and her picture; that, however, is a difficulty one can easily pardon—it provokes thought, however bewildering it may be to the average exhibition-goer. And in some of the pictures the mystic interpretation is just what one wants; as for instance, in the one on the line—

> "'Tis an awkward matter to play with souls";

and also in "Another Way of Love," a beautiful decorative picture and a spiritual problem at the same time. There is a beautiful picture-poem made out of the line—

> "As when a queen, long dead, was young":

below is the figure of the dead queen sculptured on a tomb, above is the nursery and the baby queen, and Caernarvon Castle, fresh in new masonry, seen bright in the sun through the window. "Mr. Sludge, the

Medium," is illustrated by a collection of fatuous people looking at a Punch and Judy show. Of a set of eight drawings illustrating the Life of Christ, the one of "The Resurrection" is a most remarkable conception; we are inside the tomb, and see the backs of the two angels seated and looking out, as if following the risen figure.

Among the Browning subjects there is none better than the one which has already been exhibited at the Society of Water-colours, "The Blush," as remarkable for its poetic conception as for its execution. And though we have confessed to some little disappointment at the treatment of some of the subjects, not the less we appreciate it as a remarkable exhibition, of higher intellectual interest than the average of picture shows. We may add that the sense of decorative effect is so decided in these works that we should like to see their author given an opportunity to execute mural paintings on a large scale for the decoration of a building; a task for which her sense of symbolism in painting, combined with colour effect, would render her peculiarly suited.

MR. MACLEAN'S GALLERY.

Mr. Maclean has at his Gallery in the Haymarket a fine collection of forty-two works by Willem Maris; it is not often that so many by this artist can be seen together. The collection includes two large landscapes with that fine aerial effect of sky in which this painter is superior to his better-known brother James Maris; the skies by the latter are always fine in composition but they are apt to be heavy and leaden in prevailing tone; Willem Maris gets sunlight into his skies. Among the smaller works "By the River" is particularly fine.

MR. PATERSON'S GALLERY.

The exhibition at Mr. Paterson's Gallery, 5, Old Bond-street, of "Drawings of the English, French, Dutch, and Italian Schools" is not as important as one would have expected from the title; they are mostly small drawings, some of them very slight. The small landscape studies in water-colour by Bonington are, however, interesting; there are two beautiful pencil sketches by Theodore Rousseau, and two very interesting drawings by Van de Velde, one of them a careful pencil study of a Dutch galleon, which shows us Van de Velde in the act of putting together his materials.

ROYAL ARCHÆOLOGICAL INSTITUTE.

THE annual meeting of the Institute will be held this year at Lincoln, from Friday, July 23, to Friday, July 30, with headquarters at the Saracen's Head Hotel. The following is an outline of the proposed programme, which has now been settled, subject to possible minor alterations. The Bishop of Lincoln will be President of the meeting.

Programme of Visits.

July 23.—The Society will visit Boston, and, under the guidance of Mr G. Jebb, will inspect the important parish church. The members will then journey to Tattershall, and by the kind permission of Earl Fortescue they will see the castle, which is practically unique. A visit to the church will follow, and the day's excursion will be closed by the inspection of the disused chapel of St. Leonard, at Kirkstead. In the evening it is hoped that Professor Haverfield will read a paper on Roman Lincoln.

The morning of the 24th will be devoted, under the guidance of Dr. Mansel Sympson, to an inspection of the objects of interest in the lower part of the city of Lincoln, and to a formal reception of the Society by the Mayor at the Guildhall. In the afternoon the visitors will mount to the upper part of the city and view the important series of Roman remains, the Bishop's Palace, the Vicar's Court, and the Castle, and will be entertained at tea by the Lord Bishop of Lincoln.

July 26.—A special train will convey the party to Barton-on-Humber, whose two churches are well known to all archæologists. From thence they will drive to Goxhill "Priory," and, by permission of the Earl of Yarborough, they will devote the remainder of the afternoon to Thornton Abbey. Mr. R. Brown, F.S.A., and Mr. A. Hamilton Thompson will describe the various objects visited.

July 27.—The visitors will take the train to Navenby, and drive back to Lincoln, visiting Somerton Castle and Navenby and Coleby churches, which will be described to them by the Rev. A. F. Sutton.

The afternoon will be devoted to a thorough examination of the Minster, under the guidance of Mr. W. H. St. John Hope, M.A., and Mr. John Bilson, F.S.A.

July 28.—Mr. Sutton will again take charge of the visitors, who will journey by train to Sleaford, and will drive out to see the important circle of churches at Ewerby, Heckington, Helpringham, and Silk Willoughby.

July 29.—The party will visit Grantham, and after lunching at the Angel, one of the very few mediæval hostelries which have survived to the present time, they will drive out and see the manor-houses and churches at Great Ponton, Bassingthorpe, and Boothby Pagnell. The manor-house at the last-named place is almost unique, being a well-preserved example of early Norman domestic architecture. Mr. A. Hamilton Thompson will describe the various places visited.

July 30.—The concluding day of the meeting will be devoted to perhaps the most important group of churches in Lincolnshire. The Institute will journey by special train to Long Sutton, and, driving along the fenland road, will visit the churches at Long Sutton, Gedney, Holbeach, Whaplode, Moulton, and Spalding. This series of churches, which will be described by the Rev. A. F. Sutton, will form a most interesting conclusion to what may confidently be expected to be a very successful week.

The organisation of the annual meeting is in the hands of Mr. G. D. Hardinge-Tyler, B.A., Secretary of the Institute, whose offices are at 20, Hanover-square, W.

THE ARCHITECTS' TECHNICAL BUREAU.

(COMMUNICATED.)

"A FURTHER series of standardised circulars are being issued to the architect subscribers this week comprising principally those subjects that came before the Selection Committee at the Building Trades Exhibition recently held at Olympia, and are as follows:—

THE BECK AND WEBSTER SYSTEMS OF HEATING (The Atmospheric Steam Heating Company (1907), Ltd.).
BLOUNT DOOR CHECK AND SPRING (The Yale & Towne Company, and Charles Winn & Co.).
BRIERLEY'S PATENT LEAD JOINTING (Mr. Richard Brierley).
THE "CABLE" SYSTEM VACUUM HOT-WATER HEATING (Messrs. J. F. Phillips & Son).
PATENT CHANNEL BOLT FIRE AND BURGLAR PROOF SAFES (Messrs. Phillips & Son)
CORK PAVEMENTS (British Cork Asphalte, Ltd.).
"DEL" FIREPROOF PARTITION BLOCKS (Messrs. Gardel, Ltd.).
"ECONOMIC" METAL CASEMENTS (The Crittall Manufacturing Company).
THE "GLOW" FIRE (Messrs. G. Woolliscroft & Son, Ltd.).
GRANITE SILICON PLASTER (The Granite Silicon Plaster Company).
PATENT "GRIP" ROOF TILES (Messrs. G. Woolliscroft & Son, Ltd.).
ENGLISH OAK JOINERY (Mr. John P. White).
FIREPROOF FLOORS (The United Kingdom Fireproof Flooring Company, Ltd.).
THE H.H. SERIES OF SANITARY FITTINGS (Messrs. Bristowe & Co.).
HOLLOW-BRICK AND CONCRETE FIRE-RESISTING FLOOR (Messrs. Homan & Rodgers).
INVERTIBLE BALANCED WINDOW SASH (The Shuttleworth Patent Invertible Window Sash Company).
"KULM" FIREPROOF PARTITIONS (Messrs. Horace V. Cullum & Co.).
MASON'S PATENT STAIR TREADS (The Safety Tread Syndicate, Ltd.).
"MAXIMUM DAYLIGHT GLASS" AND "CAT'S EYE GLASS" (The Maximum Light Glass Company).
NON-EXPLOSIVE GAS-MAKING MACHINES (Messrs. Young & Co.).
THE "PANIC" REVOLVING DOOR (The Van Kannel Revolving Door Company, Ltd.).
THE "QUEEN" PATENT COMBINED GAS AND COAL RANGE (Mr. Thomas Potterton).
RUBEROID ROOFING (The Ruberoid Company, Ltd.).
SANITARY SPECIALITIES (Messrs. Dawson & Co., Ltd.).
"SESAME" SELF OPENING AND CLOSING DOORS (Messrs. Pemberton, Arber, & Carey).
THE SIEGWART FLOOR (The Empire Stone Company).
ANDERSON'S SIDEROLEUM WOOD PRESERVATIVE (Messrs. D'Anderson & Son, Ltd.)
"SILVERTOWN" INDIA-RUBBER TILING (The India-rubber, Gutta-percha, and Telegraph Works Company, Ltd.).
ANDERSON'S STONIFLEX FLAT ROOFING (Messrs. D'Anderson & Son, Ltd.).
PATENT VULCANITE ROOFING AND REXILITE ROOFING (Vulcanite, Ltd.).
WILLESDEN UNDERLINING AND UNDERSLATING PAPER (The Willesden Paper and Canvas Works, Ltd.).
MICA FLAP VENTILATORS (Messrs. S. Barker & Co.).
WINN'S FIRE APPLIANCES (Messrs. Charles Winn & Co.).
XELITE PLASTER (Messrs. Clark & Co.).
"YALE" HORIZONTAL MORTISE KNOB LOCK (The Yale & Towne Company).

A meeting was held at the offices on Tuesday, when a number of interesting subjects were submitted to the Selection Committee, specialities submitted by the following firms being duly approved:—

DOG GRATE (The Bell Range and Foundry Company).
SMOKE PREVENTOR (Messrs. Robert Brown & Son).
GLASS WALL TILING (Durolite, Ltd.).
PENTALLICA TERRA-COTTA (Messrs. Gibbs & Canning).
PATENT WINDOW (Messrs. Hamilton & Co., Ltd.).
CRYSTOPAL WALL TILING (Messrs. Geo. Kent & Co., Ltd.).
TUBOLITE ELECTRIC FITTING (The Linolite Company).

Competitions Department.

Particulars of the following competitions can be obtained from the offices, the reports having been compiled from data, and other information obtained by visiting the respective sites.

	Reading.	*Grimsby.*	*Stoke-on-Trent.*	*Burslem.*
Subscribers	8s. 0d.	15s.	6s.	3s.
Non-Subscribers	10s. 6d.	18s.	8s.	5s."

Architectural Societies.

EDINBURGH ARCHITECTURAL ASSOCIATION.

On Saturday last the members of the Edinburgh Architectural Association paid a visit to Glasgow. Travelling from the Waverley Station, Edinburgh, they reached Queen Street Station, Glasgow, about two o'clock. Brakes awaited their arrival, and under the leadership of the Glasgow Institute of Architects the party drove round the city and inspected some of the more prominent buildings which have been recently erected, such as the Art Galleries, the School of Art, the Mitchell Library, the Institute of Engineers and Shipbuilders, the Clyde Trust buildings, and the new Liberal Club. The visitors found much to interest them in their tour of inspection, at the conclusion of which they dined in the Lansdowne Restaurant and afterwards returned to Edinburgh.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

An ordinary Council meeting of the above was held at 31, South Frederick-street, Dublin, on the 7th, Mr. F. Batchelor, President, in the chair. The President reported that he had had an interview with the officials of the Board of Trade in London with regard to the incorporation of the Institute, and explained the results of the interview. It was decided to hold a general meeting on June 24, with reference to incorporation. Messrs. Francis B. Craig and Charles J. Dunlop were elected members.

Archæological Societies.

SHROPSHIRE ARCHÆOLOGICAL SOCIETY.

Mr. Beville Stanier, M.P., presided at the annual meeting of the Shropshire Archæological and Natural History Society on Saturday, the 5th inst. The annual Report of the Council, presented by the Rev. Prebendary Auden, stated that the restoration of the tower of the Abbey Church, Shrewsbury, had been brought to a successful conclusion. Attention had been lately called to the interesting Norman chapel, now in ruins, situate at Malinslee. It possessed many interesting features, and on more than one occasion the Society had assisted in its protection. There was now an idea on the part of the parochial authorities to completely restore it, so that it might be used for Divine worship. If this idea was carried out the work would deserve widespread encouragement. The statement of accounts showed an adverse balance of 19*l.* 11s. 4d., compared with a deficiency of 28*l.* last year. The Report and balance-sheet were adopted, on the motion of the Chairman, seconded by Prebendary Auden. The Rev. E. Parry (Malinslee), in moving the re-election of the Council, assured the members that the restoration of Malinslee Chapel would be carried out on the most conservative lines. The ruin, he understood, went back to Saxon

times. Dr. White seconded, and congratulated the Society on having played a part in preserving Shropshire as one of the few counties which were unspoiled by civilisation or by the jerry-builder. The motion was carried.

Engineering Societies.

SOCIETY OF ENGINEERS.

At the general meeting on Monday last a paper on the Sinlumkaba (Burma) ferro-concrete bridge was read by Mr. W. E. Haldwell. He described the methods adopted in constructing a reinforced concrete arch bridge over a bridle road in a mountainous tract of country in Upper Burma. The Sinlumkaba Mill Bridge, which is the first reinforced concrete bridge to be erected in Burma, was constructed by the Burma Public Works Department, and is in one span of 40 ft., with a rise of 12 ft. in the arch, the entire width of the bridge being 9 ft., and the width of roadway inside parapets 6 ft. The level of the crown of the arch is 8 ft. above the highest known flood level. The entire arching was made of cement concrete, with two layers of reinforcing bars, the bottom layer being placed 1½ in. above the intrados, and the top layer 1½ in. below the extrados of the arch. The longitudinal reinforcing bars were placed 9 in. apart, with cross bars at right angles to them, at intervals of 2 ft., both longitudinal and cross bars (which were all ½ in. thick), being wired together at their intersections with $\frac{1}{16}$ in. wire. The thickness of the arch at the crown was 10 in., and at the haunches 3 ft. 9 in. Thus the distance between the two layers of reinforcement was 7 in. at the crown and 3 ft. 6 in. at the haunches. The backing of the bridge was formed by parallel spandrel walls, made of coursed rubble masonry in lime mortar, 4 ft. wide at the bottom and 2 ft. in width at the crown level of the arch. At this level a masonry wall 1 ft. 6 in. in thickness was built along either side of the arch for a height of 1 ft., thus acting as a retaining wall for the filling in over the crown, and on this wall the masonry parapet pillars of the bridge were built and connected by ¾-in. square iron bars, which formed the railing.

BOOKS RECEIVED.

MEDIÆVAL ARCHITECTURE; ITS ORIGIN AND DEVELOPMENT. By Arthur Kingsley Porter. (B. T. Batsford.)

THE EXPRESS WAGES RECKONER. By J. Gall Inglis. (Edinburgh; Gall & Inglis. 1s.)

Correspondence.

"A DIPLOMA COURSE IN ARCHITECTURE."

SIR,—Sir A. Brumwell Thomas's suggestion in the *Builder* of the 22nd ult. is one that many have been dreaming of for long and have begun to despair of seeing realised.

One point in his letter, however, is not quite clear. Does he intend his Diploma course to be merely an evening one? If so, in my opinion, it would be useless. The course, to be a success, must be a day one. I may be told that men would not give up the time. I don't believe it. If the standard were such that it would be a real distinction to pass through the course, more than a sufficient number would, I feel certain, be willing to devote to it a year or even two. Many men when their pupilage is finished are at a loose end what to do next. Few are able or competent to start practice straight away. A Diploma course would be something definite, and the prizes at the end thereof would be the goal at which all might aim. Some students could afford the time for it without difficulty; others, less fortunately situated, could do as many sculptor students did at the Royal Academy in my day—and as many doubtless do still—work for others for their bread and cheese in the vacations and out of hours in term time.

How and where such a course could be best instituted depends on many things; but as a possible solution I venture to recall the petition which was presented to the Council of the Royal Academy by Mr. Norman Shaw and Mr. T. G. Jackson, sixteen or seventeen years ago, urging that the architectural school should be open in the daytime. I was then asked to get signatures to the petition from past and present architectural students, and succeeded without difficulty in obtaining a large number—about 150, if I remember rightly—headed by all the prize-winners at the Royal Academy for the previous ten or fifteen years. The petition apparently was pigeon-holed. Would another and similar petition emphasizing this time the need for a Diploma course meet the same fate? The result would doubtless depend greatly on the attitude of the architectural members of the Academy towards it.

One other point which affects architectural education, not covered by Sir A. Brumwell Thomas's letter, I may perhaps be allowed to refer to briefly. In addition to extension at the top, the architectural course requires to be strengthened at the bottom. The chief difficulty the heads of architectural schools have to contend with is that the general education of a large percentage of architectural students is insufficient. If any graded series of courses such as Sir A. Brumwell Thomas suggests is to be carried out, more stringent regulations than exist at present must be made to ensure that the foundation on which the courses rest is thoroughly sound.

The thanks of all interested, and especially of those practically engaged, in architectural education are due to Sir A. Brumwell Thomas for his suggestion, and I sincerely hope that it will bear fruit. F. M. SIMPSON.

University College, June 4.

SIR,—I have read Professor Reilly's letter in your issue of May 29 with some interest and not a little amusement. In the first place it would be instructive to know upon what grounds he arrogates to himself or to the Liverpool Architectural Course of Education the lofty position he apparently wishes to take.

In any case it would be more becoming to allow others, possibly more competent to judge, to point to this or that school as being *facile princeps*.

In the second place Professor Reilly, not content with proclaiming the superiority of the Liverpool courses, has for the second time gone out of his way to be gratuitously critical of the methods employed in the Architectural Association School, but which, in his brief visits to our exhibitions of work, he does not appear to have grasped in the very least.

In all the circumstances it would be more dignified if the learned Professor confined his criticisms to matters on which he has more certain information.

I can only say I shall be pleased to explain our principles to Professor Reilly, if he will give me an opportunity in person, and himself sufficient time to assimilate a somewhat intricate problem in modern educational methods.

I should like to take this opportunity of expressing my cordial agreement with the suggestion of Sir Brumwell Thomas, contained in his letter in your issue of May 22.

My experience during the past six years, during which time I have had the good fortune to handle large numbers of students of good average capacity and mainly recruited from the Universities and Public Schools, has taught me very thoroughly the wisdom of Bacon's remark that "truth comes more often out of error than confusion."

Yet confusion appears to be the distinguishing characteristic of much that passes for education in all its branches in England at the present time. So much is attempted that the average student is merely confused or sterilised. Signs are not wanting that architectural education in this country may savour too little of *real* education, and this is due to the fact that the time at present allotted is all too short and is therefore overcrowded, all of which tends to confusion of mind. Nor must it be forgotten that if national efficiency in architecture is to be best served we must frame our initial system for the especial benefit of the average student, remembering always that he is but at the threshold of an arduous lifelong study.

This being the case, there is every reason why the foundation of a National Diploma Course would tend towards that broader outlook and fine grasp of monumental architecture, the desire for which, by the way, is not solely confined to the teachers at Liverpool University.

The argument that because the aims of different schools are so diverse is a bar to a higher course than is possible at present is really beside the mark. The opportunity for the ablest students from different schools to distinguish themselves and further advance their training is also an opportunity for the schools to exhibit the excellence of their methods.

To a certain extent diversity of aim in the different schools is a condition of vitality. The conditions prevailing in different parts of England are such that to be successful different centres must take somewhat different views, for, after all is said, the training given must primarily fit its recipients for ultimate practice, in which local conditions must be taken into consideration.

It has been repeatedly affirmed by the Board of Architectural Education that absolute similarity in training is not to be desired, for the very reasons above stated. Surely to anyone with knowledge of the immense complexity of modern architectural practice this is obvious?

Those who have the real interests of English architectural education at heart, instead of throwing difficulties in the way of further systematic training, will endeavour to bridge over those difficulties and find a means whereby those who are accounted fit and worthy can pursue their training with advantage to themselves and to the cause of national architectural efficiency.

If we are to wait until the teaching at Liverpool University has leavened the remaining mass of poor clay in matters of architectural education, we shall probably postpone the foundation of an Advanced Diploma Course until the Greek Kalends.

HUGH P. G. MAULE,
Master
The Architectural Association
School of Architecture.

June 8, 1909.

MIDDLESBROUGH LIBRARY COMPETITION.

SIR,—Our attention has been attracted to the statement that we violated the conditions of the above competition in the preparation of our design, and that a protest, signed by a large number of the competitors, has been lodged against the award.

While we have no concern with this protest, which is a matter between the Corporation, assessor, and the competitors, we desire to make our own position clear regarding the manner in which we interpreted the conditions, and we shall be obliged if you will insert this letter.

Our chief cause of offence appears to be the way we understood the word "adjoining." We read this, with its context, as follows:—"The general lending and reference libraries are to be placed in the northern part of the block (of buildings already existing), adjoining the dwelling-houses in Dunning-street," and these rooms were so placed by us.

If it was the intention that these rooms should abut against the dwelling-houses, we should have expected the conditions to read

that they should be "at the north end of the site adjoining the houses."

Regarding the door communicating between the news-room and the staircase hall, this was labelled "Pass Door" on the drawings, and dealt with as such in our report. The door can be blocked up if desired, but the passage must still remain for access to the janitor and unpacking room. RUSSELL & COOPER.

CONCRETE FENCING POSTS.

SIR,—A letter from "Cretepost" asking for information in reference to concrete fencing posts has been brought to my notice. For his information, the method of securing wood or other fencing to concrete posts, and also securing the horizontal members of wood fencing, is completely covered by patent No. 23,747 of 1907. THE PATENTEE.

METROPOLITAN ASYLUMS BOARD.

AT a meeting of the Metropolitan Asylums Board held on Saturday last week the following matters were dealt with:—

Eastern Hospital.—A letter was received from the Local Government Board stating that they would not refuse to sanction in their entirety the managers' proposals for the adaptation of Temperance Ward at the Eastern Hospital as isolation chambers.

Leavesden Asylum.—Sanction was given to the employment of labour and the purchase of material for the execution, at an estimated cost of 850*l.*, of the external painting required at the above asylum during 1909, under the supervision of the asylum foreman of works.

Caterham Asylum.—Plans, prepared by the engineer, were submitted for the conversion into infirmaries of certain blocks at Caterham Asylum, at an estimated cost of 845*l.* It was resolved to carry out the work, subject to the approval of the Local Government Board.

Quantity Surveyors.—Messrs. W. T. Farthing & Co., of 46, Strand, W.C., were appointed to take out the quantities in connexion with the provision of additional accommodation at the Eastern Hospital, at a commission at the rate of 2 per cent. on the amount of the accepted tender.

PROJECTED NEW BUILDINGS IN THE PROVINCES.

ANDERTON. — Manual instruction centre (1,300*l.*). Mr. H. Littler, architect, 16, Ribblesdale-place, Preston.

Barlow.—County school. Messrs. Sawday & Sons, architects, 6, Market-street, Leicester.

Bradford.—Power-room at Technical College (2,500*l.*). City Surveyor, Town Hall, Bradford.

Brora.—Church (3,500*l.*). Mr. R. J. McBeth, architect, Queen's House, Inverness.

Brownlees. — Methodist chapel. Messrs. Jones & Jackson, architects, 10, Albion-street, Hanley.

Castle Donington.—County school. Mr. W. Hampton, architect, Ashby-road, Loughborough.

Caterham.—Additions to asylum (770*l.*). Mr. W. T. Hatch, Engineer, Metropolitan Asylums Board, Victoria-embankment, E.C.

Chatham.—The Town Council has passed the following plans:—Alterations and additions to the Gaiety Theatre, Mr. H. E. Davis; Baptist church, Sturla-road, for the Trustees of the Old Baptists.

Clydebank.—Engineering works. Mr. R. Brown, architect, 5, Wellington-street, Glasgow.

Cottingham.—Offices and residence. Messrs. Gelder & Kitchen, architects, Alfred Gelder-street, Hull.

Dublin.—Additions, St. Vincent Hospital. Messrs. W. H. Byrne & Son, architects, 20, Suffolk-street, Dublin; Mr. Kevin Toole, builder, Dublin.

Eastbourne.—The Town Council has passed the following plans:—Motor-house, "Priorleigh," Denton-road, Mr. F. G. Cook, architect; alterations at the "Holidaye," Langney-road, Mr. D. Meakins, builder; seven cottages, Sidley-road, Mr. W. Hookham, builder; public hall and winter gardens, Devonshire Park, Mr. J. W. Woolnough, architect; two houses, Grassington-road, Messrs. Peerless Dennis & Co., builders.

Folkestone.—Additions to Hunderts Hotel, Bouverie-road West, Mr. H. Videan, architect; motor garage, Grimston-avenue, Mr. R. Pope, architect, 17, Cheriton-place, Folkestone; additions to Burlington Hotel, Mr. D. Baker, builder, 5 and 7, The Plain, Folkestone.

Glasgow.—Church, Crow-road, Messrs. Petrie & Son, architects, 134, Wellington-street, Glasgow; German church, Renfrew-street, Messrs. H. & D. Barclay, architects, 245, St. Vincent-street, Glasgow; buildings for *Glasgow Herald*, Messrs. J. Beaumont & Son, architects, 10, St. James-street, Manchester.

Gourock (N.B.).—Catholic school. Mr. W. Watson, architect, 75, Bath-street, Glasgow.

Inverness.—Houses and villas (5,500*l.*). Mr. G. Logie, 35, Queen's-gate, Inverness.

Jarrow.—School. Mr. F. Rennolson, architect, 37, King-street, South Shields.

Kelvinhaugh.—Saw mills. Messrs. Young & McKenzie, architects, Scottish Buildings, Belfast.

Netherton.—Institute buildings. Mr. R. Young, architect, Netherton.

Newcastle. — Additions, Addison Potter School, Mr. G. Forrest, architect, Moot Hall, Newcastle-on-Tyne; drill hall, Messrs. Graham & Hill, architects, 133, Pilgrim-street, Newcastle.

Northampton.—The Town Council has passed the following plans:—Three houses, Albany-road, Mr. W. C. Throssell; extension of electricity works, Angel-lane, for the Northampton Electric Light and Power Company, Ltd.; two houses, Thursby-road, Mr. A. Glenn; nine houses, Sharman-road, Mr. G. F. Sharman; additions to laundry, Kettering-road, Mr. G. B. Taylor; four houses, Whitworth-road, Mr. H. Martin; laundry, boiler-house, and additions to out-patients' department at the General Hospital, for the Governors.

Onick (N.B.).—Church (3,000*l.*). Mr. J. G. Falconer, architect, 4, Cameron-street, Fort William.

Padiham.—Skating-rink. Mr. H. A. Whincup, architect, 3, Institute-street, Padiham.

Pinner.—Baptist chapel (4,000*l.*). Messrs. Spalding & Myers, architects, Watford.

Rhos.—Chapel. Messrs. Porter & Elcock, architects, Colwyn Bay.

Rodley.—Sunday-school. Messrs. Chorley & Connor, architects, 16, Park-place, Leeds.

Rotherham.—The Town Council has passed the following plans:—House, Norfolk-street, Mr. W. Bray; four houses, St. Stephen's-road, Messrs. Armstrong & Wortley; eight houses, Lindley-street, Mr. Herbert James; eight houses, Lindley-street and Selborne-street, also seventeen houses, Hartington-road and Roseberry-street, Messrs. Chas. Green's Sons; twenty-four houses, Ewers-road, Messrs. T. Gray & Sons; extensions to workshops, at Holmes Rolling Mills, Messrs. J. J. Habershan & Sons; two houses, Grange-lane, Messrs. Greaves & Wilkinson.

Salford.—Eight shops, Eccles New-road. Mr. Taylor.

Sheffield.—The Town Council has passed the following plans:—Four houses, Manor-lane and Stock-road, Mr. E. Martin; seven houses, Harrison-road, Mr. R. B. Hickson; two houses, Blair Athol-road, Mr. J. A. Wragg; six houses, Oakbrook-road, Mr. W. J. Patchett; two houses, Mr. R. J. Hill; two houses, Main-road, Darnall, Mr. F. H. Mellor; three houses, Townsend-street and Slifn-street, Mr. John Coates; two houses, Mitchell-road, Mr. A. Staveley; alterations to Punch Bowl Hotel, Crookes and Springvale-road, Messrs. D. Gilmour & Co., Ltd.; two houses, Sydney-road, Mrs. C. Mason; two houses, Rupert-road, Mr. A. E. Turner; additions to Old Ball Inn, Carver-street and Ball-lane, Messrs. A. H. Smith & Co., Ltd.; two houses, Penrhyn-road, Mr. S. Hogg; two houses, Hardwick-crescent, Mrs. E. R. Brain; three houses, Bloor-street, Mr. W. McCurdy; five houses, Denmark-road, Mr. Charles Hatton; six houses, Slinn-street, Mr. T. Church; two houses, Montrose-road, Mr. J. Plant; four houses, Limpsfield-road, Mr. George Exley; two houses, Oakbrook-road, Mr. James Samuel; two houses, Tasker-road, Mr. M. S. Allwood; sixteen houses, Buckenham-street, Mr. G. E. Phillips; five houses, Springfield-road, Mr. J. S. Teanby; nineteen houses, Chesterfield-road and Greenhill-road, Mr. A. G. Harbord; five houses, Travis-place and Broomhall-street, Mr. W. McCurdy; five houses, Hunter House-road, Mr. C. Thompson; two houses, Burngreave-street, Messrs. Coupe Brothers; three houses, Carsick View-road and Tom-lane, Mr. J. Pepper; four houses, Bernard-street, Mr. Wm. Angell.

South Shields.—Skating-rink. Mr. J. H. Morton, architect, 5A, King-street, South Shields.

Stanley (Co. Durham).—Shop and offices. Messrs. Fenwick & Watson, architects, Pearl Buildings, Newcastle.

Sutton-in-Ashfield. — Cookery school and laundry, etc. (6,000*l.*). Messrs. F. Fisher & Sons, builders. Pilchergate, Nottingham.

Uxbridge.—The Rural District Council has passed a plan lodged by Mr. F. E. Green for the erection of a detached house in Otterfield-road, Yiewsley.

Waterfoot.—Bank premises. Mr. J. Horsfall, architect, 4, Chapel-walk, Manchester.

West Stanley.—Skating-rink. Mr. Crossley, architect, West Stanley.

Whifflet (N.B.).—School. Mr. J. Baird, architect, 134, Bath-street, Glasgow.

Wigan.—Alterations to market hall, Borough Engineer, Wigan Town Council; rebuilding slaughter-house, Mill-yard, Scholes, Mr. Richard Pennington, architect, Library-street, Wigan; six houses, Florrie-street, Messrs. W. B. Johnson & Son, architects, 31, King-street, Wigan. The Town Council has passed the following plans:—Twelve houses, Holme-terrace, Executors of Mr. S. Cubby; two houses, Kenyon-road, Mr. J. Walkden; two houses, Hornby-street, Misses Potter; sixteen houses, Billinge-road, Messrs. Clough & Gaskell; extension of dairy, Dawber-street, for the Wigan and District Equitable Co-operative Society.

Wolsingham. — School (10,000*l.*). Mr. T. Richardson, architect, 57, High-street, Stockton.

LONDON AND DISTRICT BOROUGH COUNCILS.

Battersea.—Electric bells are to be provided for the baths, at an estimated cost of 86*l.* Tar-paved footpaths in twenty-one streets are to be repaired, at an estimated cost of 740*l.* A building application from Meter Cabs, Ltd., for an addition to a fitters' shop (late Salvation Army hall) in Ingate-place, Queen's-road, has been passed.

Hackney.—Building plans have been passed by the Council as follows:—For the Crown Perfumery Company, one-story building in Sidney-road; for Mr. E. A. Tyler, on behalf of Messrs. Leeks & Blake, one shop and ten houses, Daubeney-road, and one shop and thirteen houses, Durrington-road; for Mr. S. H. Barclay, ten houses, Ashtead-road, Springhill; for Mr. F. Collins, six houses, Holmbury-view; for Mr. S. H. Barclay, ten houses, Ashtead-road.

Hampstead.—A circular letter has been received from the London County Council intimating that they do not propose in future to sanction loans for repaving works otherwise than in exceptional circumstances, and that as regards paving works in place of macadam the repayment of the loan, if sanctioned, must be restricted to a period of three years.

Islington.—The carriageways in Market-road and York-road are to be repaved, at a cost of 172*l.* and 110*l.* respectively; 180*l.* is to be spent in paving the macadamised carriageway of Prospect-row with second-hand granite setts.

Southwark.—Alterations to the siding at Manor-place depôt are to be made, and improved buffer-stops are to be provided, at an estimated cost of 415*l.* The work is to be carried out by the South-Eastern and Chatham Railway Company on the payment of the actual cost, plus 10 per cent. for establishment charges. A new battery-room is to be built for the electricity undertaking on the site of 18, Penrose-street, at an estimated cost of 900*l.*

Stained Glass & Decoration.

MEMORIAL REREDOS, ST. MARY'S, TOTTENHAM.

At St. Mary's, Tottenham, a reredos and an altar tomb have been erected in memory of the Rev. Edward Floyer Noel Smith. The reredos, which cost nearly 600*l.*, is of tinted alabaster, with white alabaster figures in high relief, and is the work of Mr. Lawrence Turner, from the designs of Messrs. J. E. K. & J. P. Cutts, architects. The tomb is of Caen stone, with a recumbent effigy of the late vicar in white alabaster, and is the work of Messrs. Henry Hems & Sons, of Exeter.

Obituary.

MR. MEDLAND TAYLOR.

We regret to announce the death, on May 31, of Mr. James Medland Taylor, of Stanford, Rusholme, Manchester, and of No. 2, St. Ann's-churchyard, Fellow of the Manchester Society of Architects, and son of the late Isaac Taylor, of Stanford Rivers, Essex, aged 75 years. Of Mr. Medland Taylor's more important architectural works, we have illustrated the following:—Reinstatement of the little quadrangle, or Cloister Court, Chetham College (November 7, 1896, "Manchester," in our "Architecture of Large Provincial Towns" series); Sacred Trinity Schools, Blackfriars, Salford (December 12, 1891); St. Paul's Church, Fairhaven, Lytham, for 800 worshippers (March 11, 1899); and the Astley-Cheetham Public Free Library, Stalybridge (January 13, 1900). He was the architect of St. John the Baptist Church, New Springs, Aspull, Wigan, 1896-7; for the enlargement of St. Agnes Church, Birch, near Manchester, 1893; St. Catherine Church, Burnley, 1897; the restoration of St. Thomas's Church, Stockport; enlargement and improvement of St. Phillip's Church, Salford, 1895; St. Michael's Church, Hulme, 1864; St. John the Evangelist Church, Stand, near Manchester, and the memorial pulpit, 1891; the rebuilding, 1899, of St. Peter's Church, Bury; the Seamen's Institute and Chapel, near the docks in Trafford-road, Manchester, with

captains' clubroom, lay missioner's house, etc. (Messrs. Medland Taylor & Son), 1900; Stowell Memorial Church, Eccles New-road, Salford (Messrs. M. & H. Taylor), 1868-9; and St. Peter's Church, Warrington, in 1890, designed after the Gothic style, and having a capacity of 700 seats.

General Building News.

CHURCH REBUILDING, LANGDON.

The church of St. Mary, West Langdon, which was destroyed by fire on October 31, 1906, has been rebuilt. Practically all that remained of the building were the four walls, and in places these even were badly damaged. In the rebuilding the bases of the old side walls, which are of flint, were used, but it was found necessary to replace the stonework of the windows. The two end walls were practically rebuilt. The chief addition to the structure is a lean-to porch, which replaces the old interior lobby. The work has been carried out by Messrs. Adcock & Sons, Canterbury, and the architects were Messrs. Jennings & Duthoit, Dover.

NEW CHURCH, BOURNEMOUTH.

The new church of St. Alban's, Bournemouth, was dedicated on Thursday, June 3. The church, which has been built at a cost of 12,000*l.*, occupies a favourable site on the Charminster-road. There is a considerable fall in the level of the site from west to east, of which the architect has taken advantage by placing large crypt vestries under the chancel and chapel, and connecting them with the church by a broad flight of stone steps. Although the cost of building has necessarily been increased by the requirements of the site, yet the external architectural effect of the east end thus raised some 17 ft. higher from the ground level is greatly enhanced, and the vestries obtained are large and spacious enough to be used for parochial purposes. The plan of the church consists of a nave 93 ft. 6 in. in length by 30 ft. 6 in. in width, with lofty double transepts, north and south. An arch carried up nearly to the whole height of the church divides the nave and chancel, the latter being 40 ft. in length by 27 ft. 6 in. in breadth. Passages for returning communicants are placed on either side, divided from the choir by oak screens, with galleries over for musicians and the organ on the north and south sides respectively. An apsidal-ended chapel is thrown out east of the north transept, and a sacristy is placed on the south side of the chancel. A baptistry is placed centrally between the two western porches, and a tower and spire (not yet completed) will occupy a position at the western junction of the north transept and aisle. There is accommodation for 812 adults, and a choir of forty-two, with musicians' gallery in addition. The external facing is of Purbeck rock-faced stone, relieved by bands and dressings of Monk's Park stone. The interior is faced with red and yellow stock bricks, relieved with Corsham Down stone bands and dressings. The whole of the floor of the body of the church is of Goddard's wood block. The chancel is paved with various coloured marbles, and the chapel and baptistry with Rust's mosaic. The heating is by low-pressure hot water, supplied by Messrs. C. P. Kinnell & Co. The church is lighted by electricity, the wiring being carried out by Messrs. Bryant & Co., of Bournemouth. The whole work has been carried out by Messrs. Bowman & Sons, builders, of Stanford, from the designs and under the supervision of Mr. Geo. H. Fellowes Prynne, of Westminster.

NEW CHURCH, CYNLLWYN-DU, TYLORSTOWN.

A new church is being built in this village. It comprises a nave, chancel, organ-chamber and vestry, and clergy vestry, and a parish-room will be provided under the chancel. When completed the church will seat 254 people. The contract has been let to Messrs. Gough Brothers, of Cardiff, for 2,500*l.*, and the architect is Mr. Bruce Vaughan.

HIGHER ELEMENTARY SCHOOLS, BELPER.

A new higher elementary school and pupil teachers' centre have been erected in this town. The buildings stand on a site in the Derby-road. They are of stone from Mr. Strutt's quarry in Red-lane, Makeney, with dressings of Matlock stone. The roof is covered with Westmorland green slates, and the windows have iron casements and lead glazing. On the ground floor are five classrooms for boys and girls, each accommodating forty scholars, with cloakroom and lavatories. For the pupil teachers there are four classrooms, each accommodating thirty, with cloakrooms, etc. A large central hall will be common to the two departments. Rooms have been provided for the teachers, art, science, etc. The principal block has on either side a cookery centre and a manual training centre. The buildings have been erected to plans prepared by Messrs. Hunter & Woodhouse, Belper. Mr. J. K. Ford, of Derby, was the contractor, and Mr. H. Gillett, Belper, has done the plumbing, heating, gas fitting, and sanitary work.

SUNDAY-SCHOOLS, DERBY.

Sunday-schools are being erected in connexion with St. Augustine's Church, Derby. The part of the building now being carried out will be used for girls and infants, whilst a future continuation of the building will accommodate 314 boys, and will also be used as a parish hall, to hold, with the gallery, about 650 people. The contract for the first section of the building, to contain 352 girls and 300 infants, has been let to Mr. Henry Chattle, of Empress-road. The architects are Mr. J. Reginald Naylor and Mr. G. Hanson Sale, of Derby.

SECONDARY SCHOOL, LOWESTOFT.

The Lowestoft Higher Education Committee are building on a site in Yarmouth-road, North Lowestoft, a new school, which is to cost about 12,000*l.* The school is for boys and girls, and is to accommodate 320 pupils. The architects are Messrs. Brown & Burgess, of Ipswich, and the builder is Mr. Charles Roper, also of Ipswich, whose tender amounts to 9,143*l.*

COUNCIL SCHOOL, MAIDSTONE.

The foundation-stone has been laid of a new Council school at Maidstone. The building will have walls faced with red brick, and the roof will be tiled. It will consist of two floors, the upper for the senior scholars and the ground floor for the juniors. There will be two large central halls, one on each floor, 80 ft. long, 27 ft. wide, from which the classrooms open. There will be twenty classrooms, with east and west aspect. The Borough Surveyor (Mr. Bunting) has prepared the plans, and tenders were received from eight local firms, that of Mr. W. T. Burrows being accepted at 13,339*l.* The estimated cost of building, furnishing, and equipping the school is 15,371*l.*, and the site 2,861*l.*, making a total of 18,232*l.*

MISSION-HALL, ROTHERHAM.

The corner stone of the Westgate Mission Hall, Rotherham, was recently laid. The cost of the new building, including heating, lighting, boundary walls, asphalting, conveniences, etc., but exclusive of furnishing, will be nearly 1,750*l.* The contractors are Messrs. George Saul & Sons, of Kimberworth-road, and the work is being carried out under the supervision of the architect, Mr. J. E. Knight.

PROPOSED EXTENSION OF THE PUBLIC BATHS, WARRINGTON.

A scheme has been prepared for the enlargement of the public baths at Warrington by Mr. Longdin, the Borough Surveyor. The scheme provides for the erection of a new ladies' first-class swimming-bath in place of the existing one, which it is proposed to use as a second-class bath; a new men's second-class bath, and several minor improvements.

BUILDING IN THE EASTLEIGH URBAN DISTRICT.

The Eastleigh Urban District Council have approved the plans of the following:—Proposed church in Desboro'-road, for the Vicar and Building Committee: twelve houses in Chamberlayne-road, for Messrs. G. F. & J. Hedges, and Mr. A. Pirani; a house in Winchester-road, for Mr. Garrett; six houses in Chamberlayne-road, for Mr. McIntosh; bay windows to seventeen houses in Cranbury-road, for Messrs. Goater & Elliott; and one house in Doncaster-road, for Pitfield Brothers.

NEW HALL AT HERNE HILL.

Princess Victoria of Schleswig-Holstein on Thursday last week opened the new St. Faith's Hall at Red Post-hill, Herne Hill. The architects were Messrs. Greenaway & Newberry, and the builders Messrs. Joseph Dorey & Co. The contract price was 2,944*l.* The building stands on a site of 1¼ acres, and in time it is proposed to erect a church and vicarage.

HOUSING AND IMPROVEMENT SCHEME, PORT GLASGOW.

The principal contract for the reconstruction of the central portion of the town of Port Glasgow has been placed with Messrs. P. M'Bride & Co., builders and contractors, Port Glasgow. The ground occupied by the condemned area covers several acres, and provides house accommodation for over 2,000 persons. The new buildings will give accommodation for nearly 1,800 of the population. The work is to be carried on in three sections, and one year is to be devoted to the reconstruction of each section.

PROPOSED NEW BUILDINGS IN LONDON.

Additions, Willesden Fine Art Company's premises, Mr. G. A. Sexton, builder, Bank-chambers, Belsize-road, N.W.; shops, Golder's Green, N., Mr. J. Gibb, builder, 88, West End-lane; warehouse, Theobald's-road, W.C., Messrs. Lander, Bedells, & Crompton, architects, 6, John-street, Bedford-row, W.C.; shops, Peckham, S.E., Mr. W. L. Dowton, architect, 44, Theobald's-road, W.C.

EDINBURGH GEOGRAPHICAL INSTITUTE.

The Edinburgh Dean of Guild Court has passed the plans for the new premises of the Edinburgh Geographical Institute for Messrs. J. Bartholomew & Co. The building, which is of two stories, is to be erected at the south-east corner of Duncan-street and South Gray-street, with the principal frontage towards Duncan-street. The architect is Mr. H. Ramsay Taylor, of Messrs. Cousin, Ormiston, & Taylor, architects and surveyors, Edinburgh.

BUILDING IN GLASGOW.

At the Dean of Guild Court recently authority was given for proceeding with the erection of the last wing of the Glasgow and West of Scotland Technical College, the cost being estimated at about 40,000*l.*; and leave also was given to erect additional wards at the Western Infirmary at a cost of 15,000*l.*; whilst the Glasgow Savings Bank were authorised to take down the existing large block of buildings at the junction of New City-road and Shamrock-street, and to erect other buildings on the site. At the same Court also a lining was granted to the Partick Thistle Football Club to form a new football field, and to erect stands and pay-boxes, etc., in Firhill-road, at a cost of 2,100*l.*

TRADE NEWS.

MESSRS. PATMAN & FOTHERINGHAM have obtained the contract for a large block of chambers at Brick-court, Middle Temple, for the Honourable Society of the Middle Temple. Sir Aston Webb and Mr. H. J. Wadling are the joint architects.

At the Orphanage, Woking, a scheme of decoration has been carried out by the Silicate Paint Company, in "Duresco." The hall is treated in ivy-green Duresco in the filling, and carmine Duresco on the dado; the dormitories with the filling in cream Duresco, and the dado in ivy-green Duresco.

Sanitary and Engineering News.

WATER SCHEME, COGGESHALL AND KELVEDON.

Mr. P. M. Crosthwaite, M.Inst.C.E., Local Government Board Inspector, recently held an inquiry into the application of the Braintree Rural Council to borrow 8,000*l.* for supplying the parishes of Great and Little Coggeshall and Kelvedon with water, including the construction of a reservoir in the Colne-road, with a capacity of 163,000 gallons. Mr. H. H. Sands produced plans of the proposed scheme.

PORT DEVELOPMENT AT COLCHESTER.

The Colchester Town Council have approved a scheme to afford greater facilities for maritime trade, necessitated by the growth of manufactories on the banks of the River Colne. The river is to be deepened, and also widened by 100 ft., and a new quay 2,000 ft. long constructed, with a roadway 45 ft. wide alongside, and 10 ft. to be occupied by a line of rails connecting with the Great Eastern system, the total outlay amounting, roughly, to 10,000*l.*

WATER SUPPLY IN EAST LOTHIAN.

The Western District Committee of the County Council of Haddington have considered a report from the engineers with reference to the cost of the Hopes and Stobshiels schemes, by which it is proposed to supply a large part of the western district of the county, including Gullane, with water. The cost of the Hopes scheme was estimated at 45,000*l.*, and the Stobshiels scheme at 33,200*l.* The respective available intake areas were 1,600 and 1,000 acres. The water from the Hopes was reported to be of slightly better quality, but there was rather more risk of extra expense being incurred in the construction of the necessary reservoir. The Council have decided to call for an additional report from the engineers on the Hopes scheme.

DEVON COUNTY ASYLUM SEWERAGE SCHEME.

Mr. P. M. Crosthwaite, M.Inst.C.E., and Dr. H. T. Bulstrode, M.D., Local Government Board Inspectors, recently held an inquiry at Exminster into an application of the St. Thomas Rural District Council to borrow 7,500*l.* for the purposes of sewerage and sewage disposal works for the parish, in which the Devon County Asylum is situated. Mr. S. R. Lowcock, M.Inst.C.E., explained at length the proposed scheme. He said that his experience was that asylum sewerage could not be satisfactorily treated by septic tanks under anything like a twenty-four hours' system.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xvii.; Auction Sales, xxiv.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

JUNE 15.—**Reading.**—OFFICES.—The Berkshire C.C. invite competitive designs for proposed new offices, committee-rooms, etc., at the Fosbury, Reading. Premiums of 100*l.*, 75*l.*, and 50*l.* Particulars from Mr. J. Fred. Hawkins, County Surveyor, Bank-chambers, Cross-street, Reading. Deposit, 1*l.* 1s. For further particulars see advertisement in our issue of April 17.

JUNE 16. — **Bury.**—HOUSES.—The Corporation of Bury invite from local builders schemes for laying out a site, together with plans, elevations, and sections and tenders, for the erection of thirty houses, to let at rents varying from 4s. to 4s. 6d. per week. Premiums of 20*l.*, 10*l.*, and 5*l.* will be awarded for the first, second, and third schemes selected in order of merit, subject to certain conditions, copies of which may be obtained upon application to the Borough Engineer.

* JUNE 28.—FOUNTAIN.—Designs for a fountain for a public garden. See advertisement in this issue for further particulars.

JUNE 30. — **Walsoken.**—SCHOOL. — The Norfolk Education Committee invite plans, specifications, and estimates for a new school. A plan of the site and full particulars can be obtained on application to the Secretary at the County Education Offices, Shirehall, Norwich.

JULY 9.—**Stoke-upon-Trent.**—ADDITIONS TO TOWN HALL.—The Corporation invite designs for additions to existing Town Hall. Premiums of 100*l.* and 50*l.* Conditions, etc., from Town Clerk, Town Hall, Stoke-upon-Trent. For further particulars see advertisement in our issue of May 15.

JULY 17 — **Burslem.**—COMPETITIVE PLANS—EXTENSION OF TIME.—The Corporation invite competitive plans for new public buildings, which will be placed before an assessor to be appointed by the Corporation. Subject to the conditions of competition, the architect whose design is considered by the assessor to be the best will be appointed to carry out the work, and the respective architects whose designs the assessor decides to be second and third in order of merit will be awarded premiums of 100*l.* and 50*l.* respectively. All designs must be sent in before July 17 next. Conditions of competition, etc., can be obtained from Mr. Bettany, Borough Surveyor, on payment of 2*l.* 2s.

JULY 30.—**Grimsby.**—The Corporation invite designs for the extension of existing Town Hall. Premiums of 250*l.*, 150*l.*, and 100*l.* Conditions from Mr. H. Gilbert Whyatt, Borough Engineer, Town Hall, Grimsby. Full particulars only on receipt of a deposit of 2*l.* (Cheques to be made out to Mr. Frank Stephenson, Borough Treasurer.) See advertisement in our issue of April 24 for further particulars.

JULY 31. — **Glasgow.** — LAYING-OUT LAND.—**The Patrons of the Royal Incorporation of Hutchesons' Hospital in the City of Glasgow invite competitive designs for laying-out for feuing and building their lands of Thornliebank, in the Parish of Eastwood and County of Renfrew, near the City of Glasgow. The terms and conditions of the competition, and, upon deposit of 3*l.* 3s., skeleton plans showing the situation and boundaries of the different portions of the lands, may be had from the Chamberlains of the Hospital, Messrs. Hill & Hoggan, 194, Ingram-street, Glasgow, with whom designs must be lodged not later than July 31, 1909. Premiums of 100*l.*, 75*l.*, 50*l.*, and 25*l.* respectively will be awarded.**

* SEPTEMBER 1. — **New Cross, S.E.** — BRANCH LIBRARY.—The Deptford B.C. invite designs for a Branch Library at New Cross. See advertisement in this issue for further particulars.

Contracts.

BUILDING.

* JUNE 10.—**Leytonstone.**—ADDITIONS.—The West Ham Guardians invite tenders for the erection of additions to the water tower at the Workhouse. See advertisement in this issue for further particulars.

JUNE 14. — **Aberavon.** — CHAPEL.—Tenders are invited for alterations to Wern Congregational Chapel, Aberavon, and erection of new schoolrooms, etc. Plans, etc., may be seen at, and quantities obtained from, Messrs. Evans & Jones, architects, Station-road, Port Talbot, on payment of 2*l.* 2s.

JUNE 14.—**Banchory Town Hall.**—DOOR, ETC.—Tenders are wanted for the mason and carpenter works of new exit door, and for the heating engineer works of a new heating installation. Plans, etc., may be seen with Mr. Jas. Gaul, High-street, Banchory, and at the offices of Messrs. Brown & Watt, architects, Aberdeen.

JUNE 14. — **Great Corby.** — HOUSES. — Tenders wanted for two houses at Great Corby, for Miss Railton. Plans to be seen at office of Mr. H. H. Hodgkinson, architect, 64, Lowther-street, Carlisle.

JUNE 14.—**Southport.**—INFIRMARY BEDROOMS, ETC.—The Board of Management of the Southport infirmary invite sole tenders for the erection of nurses' bedrooms and other alterations. Bills of quantities may be had from the architect, Mr. Goodwin S. Packer, Shaftesbury-buildings, East-bank-street, Southport.

JUNE 14-JULY 5.—**Whitley and Monkseaton.**—SCHOOL. — Northumberland Education Committee invite tenders for the work of extending Whitley and Monkseaton North Council School. Name, etc., to Mr. C. Williams, Secretary to the Education Committee, The Moothall, Newcastle-on-Tyne, not later than the 14th inst., together with a deposit of 2*l.* 2s. for specification, etc. Plans may be inspected at the office of Mr. W. H. Knowles, architect, Sun-buildings, Collingwood-street, Newcastle-on-Tyne.

JUNE 14.—**Wigton.**—ALTERATIONS, ETC.—The R.D.C. of Wigton invite tenders for alterations and additions to premises in George-street, Wigton. Plans, etc., may be seen at the Council Offices, "Kildare," Wigton, or at the office of Mr. A. W. Johnston, architect, 81, Castle-street, Carlisle.

JUNE 15. — **Bargoed.**—BUNGALOW.—Erection of a bungalow at Bargoed for Mr. P. Williams. Plans, etc., can be seen at office of Mr. Idris Leyshon, architect and surveyor, Hanbury-road, Bargoed.

JUNE 15.—**Hampton Wick Endowed Schools.**—CLOAKROOM.—The Governors invite tenders for the erection of a cloakroom and additional staircase. Plans, etc., may be seen on application to Mr. Percy Taylor, Architect and Surveyor to the Governors, High-street, Hampton Wick.

JUNE 15.—**Manchester.**—PITCH STORE, ETC.—The Paving, etc., Committee invite tenders for the rebuilding of pitch store, cart-sheds, etc., at the Moss Side Highways Yard. Drawings may be seen, and specification, etc., obtained, at the office of the City Architect, Town Hall.

JUNE 15. — **Middlesbrough.** — ADDITIONS, ETC. — Additions and alterations to St. John's Church Schools, Middlesbrough. Names, etc., to Messrs. J. M. Bottomley, Son, & Wellburn, architects, 28, Albert-road, Middlesbrough, and 13, Bond-street, Leeds.

JUNE 15.—**Mountain Ash.**—HOUSE.—Erection of a dwelling-house in Duffryn-road, Mountain Ash, for Mr. W. Williams. Plans, etc., may be seen at office of Messrs. Morgan & Elford, architects, 1, Jeffrey-street, Mountain Ash.

JUNE 15. — **Wealdstone.**—COTTAGE.—Wealdstone U.D.C. invite tenders for the erection of a foreman's cottage and an engine and tool house at their Sewerage Outfall Works. Plans, etc., may be seen, and specifications, etc., can be obtained, on application to Mr. Herbert Walker, Engineer and Surveyor, Council Offices, Wealdstone, and on payment of 1*l.* in respect of the works.

JUNE 16. — **Edinburgh.**—ALTERATIONS.—Edinburgh P.C. invite tenders for mason, joiner, plumber, and plaster work, etc., in connexion with alterations to be executed at Craigleith Poorhouse, Edinburgh. Schedules, etc., may be obtained from Mr. R. M. Cameron, Architect to the Council, 53, Great King-street, Edinburgh.

JUNE 16. — **Gilmerton.** — POLICE-STATION. — Mid-Lothian C.C. invite tenders for mason, joiner, plumber, plaster, slater, and painter works in connexion with proposed addition to and alterations on Gilmerton Police-station. Plans may be seen, and copies of the specification, etc., may be obtained, at the office of Mr. R. Murray, surveyor, 50, George-street, Edinburgh, or Mr. George Wilkie, architect, Peebles.

JUNE 16.—**Haxby.**—GRAND STAND.—The Committee of Haxby and District Agricultural and Horticultural Society invite tenders for the construction and erection of a grand stand. Drawings, etc., may be seen, and forms of tender obtained from Mr. E. T. Felgate, architect and surveyor, 3, Castlegate, York.

JUNE 16. — **Keighley.** — WATER-CLOSETS, ETC.—Tenders are invited for the erection of four water-closets and ash-places proposed to be erected in Colne-street. Full particulars from Mr. Walter Fowlds, A.M.Inst.C.E., Borough Engineer.

JUNE 16.—**Macclesfield.**—SCHOOL ADDITIONS, ETC.—The Managers of the Macclesfield Certified Industrial School invite tenders for carrying out additions and improvements to the school. Plans can be seen, and bills of quantities obtained, at the office of Mr. Jabez Wright, architect, Macclesfield, by depositing 1*l.*

JUNE 16.—**Penrhiwceiber.**—ADDITIONS TO HALL.—Additions to St. Winifred's Hall, Penrhiwceiber, for the Rev. J. R. Jones, Vicar. Plans, etc., may be inspected at the office of Mr. T. W. Millar, architect and surveyor, Mountain Ash.

JUNE 17. — **Brora.** — CHURCH AND MANSE.—Mason, carpenter, slater, plasterer, plumber, painter, and glazier works of United Free Church and Manse, Brora. Schedules of quantities to be obtained from Mr. Robt. J. Macbeth, architect, Inverness, and plans seen with him.

JUNE 17.—**Cardiff.**—INFIRMARY WING.—New wing and isolation block to contain seventy-eight beds, a new operating theatre, a pathological block, nurses' and servants' bedrooms, and other buildings. Names to Mr. Leonard D. Rea, Secretary and General Superintendent, Cardiff. Quantities can be obtained on making a deposit of 5*l.* 5s.

JUNE 17. — **Churwell.**—WAREHOUSE.—Warehouse, etc., Lane Side Mills, Churwell, for Messrs. Charles Scarth & Sons, Ltd. Plans, etc., may be seen, and quantities obtained, at offices of Mr. T. A. Buttery, F.I.A.S., architect, Queen-street, Morley, and 1, Basinghall-square, Leeds.

JUNE 17. — **Cork.**—COTTAGES.—Cork R.D.C. invite tenders for building ninety labourers' cottages, and fencing same number of cottage plots. Plans, etc., can be obtained from the Clerk to the R.D.C. on payment of 5s.

JUNE 17.—**Hambledon.**—SHED.—The Guardians of the Poor of the Hambledon Union invite tenders for the erection of a shed with loft over in the grounds of the Workhouse at Hambledon, Surrey. The plans, etc., can be seen on application to the Board's Architect, Mr. Edward L. Lunn, 36, High-street, Guildford.

JUNE 18. — **Bournemouth.**—ELEMENTARY SCHOOLS, SHERBORNE-ROAD, WINTON.—The Bournemouth Education Committee invite tenders for the erection of new elementary schools in the Sherborne-road, Winton. Full particulars and form of tender can be obtained, and plans may be seen, at the office of the Borough Engineer, provided that the sum of 2*l.* 2s. has been previously deposited.

JUNE 18. — **Shaw.** — SCHOOL WORKS.—Lancashire Education Committee invite tenders for the erection of new playsheds and latrines, alterations and additions, and redraining at Greenfield Council School, Shaw, near Oldham. The plans may be seen at the school by application to the schoolmaster, and bills of quantities obtained at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, by payment of a deposit of 2*l.*

JUNE 21. — **Clayton and Royston.** — SCHOOL WORKS.—The West Riding Education Committee invite whole or separate tenders for the following works:—Clayton Provided School.—New heating boiler (heating engineer). Royston Provided School.—Alterations. Plans may be seen, and specifications, etc., obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

JUNE 21.—**Haxey.**—CHURCH.—New church and out offices at Haxey. Plan, etc., at the Rev. P. H. Powell's, Epworth.

JUNE 21.—**Penshaw Staithes.**—MINERS' HALL.—Building miners' hall at Penshaw Staithes. Plans, etc., can be seen at the architect's office, Mr. Jas. Palliser, Philadelphia, Fence Houses.

JUNE 21. — **Southampton.**—POLICE-STATION.—The Corporation invite tenders for constructing a police-station, etc., at Payne's-road. Plans, etc., may be inspected, and form of tender obtained, at the Borough Engineer's Office upon production of the Borough Treasurer's receipt for a deposit of 2*l.* 2s.

JUNE 22. — **Monaghan.** — LABORATORY, ETC.—Erection of a new laboratory and additions to the boarding-school, Convent of St. Louis, Louisville, Monaghan. Copies of the plans, etc., can be obtained from Mr. J. J. M'Donnell, architect, 27, Chichester-street, Belfast.

JUNE 23.—**Penryn.**—QUAY WALL.—The Council invite tenders for taking down and reconstructing about 67 ft. of quay wall at the Town Quay. The plans, etc., may be seen, and any further particulars obtained, by making an appointment with Mr. J. P. Jenkins, Borough Surveyor, Broad-street, Penryn.

JUNE 24. — **Kirkburton.** — SCHOOL. — The West Riding Education Committee invite whole or separate tenders for Kirkburton New (Mixed) School. Plans may be seen, and specifications, etc., obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

JUNE 24. — **Llanelly.**—Y.M.C.A. BUILDING.—Erection of a new building for the Llanelly Y.M.C.A. Plans, etc., can be seen at office of Mr. W. Griffiths, F.S.I., architect, Llanelly, and bills of quantities may be obtained on payment of 1*l.* 1s.

* JUNE 24. — **M. Stoneham.**—DWELLING-HOUSES.—The Southampton C.C. invite tenders for erection of small holdings dwelling-houses. See advertisement in this issue for further particulars.

JUNE 25. — **Glasgow.** — ROYAL INFIRMARY RECONSTRUCTION (F. BLOCK — SPECIAL DISEASES). — The Managers invite tenders for the works of the above. Drawings may be seen at the office of the architect, Mr. James Miller, A.R.S.A., 15, Blythswood-square. Copies of the schedules may be obtained from Mr. Peter Rintoul, Secretary, 212, West George-street, Glasgow, on payment of 1*l.* 1s. each.

JUNE 25.—**Ormside Hospital, near Appleby.**—ADDITIONAL BLOCK.—Tenders are invited for the erection of an additional block, 97 ft. in length, in connexion with the Joint Infectious Hospital at Ormside, near Appleby. Plans, etc., may be seen by

appointment at the office of the Borough Surveyor, Appleby.

JUNE 28.—**Biggleswade.**—SCHOOLS.—Building a block of Church of England schools, Biggleswade, for the Foundation Managers. Bills of quantities, etc., may be obtained on application to Mr. Thomas Cockrill, A.M.Inst.C.E., architect, Market-square, Biggleswade, on payment of 2*l.* 2s.

JUNE 28.—**Droxford.**—FLOOR.—The Guardians of the Union invite tenders for taking up a stone floor and replacing same with wood, and certain repairs, painting, etc., at the Droxford Workhouse. Specifications may be seen at office of Mr. H. Godfrey Pearson, Clerk, Bishop's Waltham, or at the Workhouse, Droxford.

JUNE 28.—**Sharlston.**—SUNDAY SCHOOL.—Erection of a central Sunday school, near St. Luke's Church, Sharlston. Drawings, etc., may be seen at St. Luke's Lodge, Sharlston, near Wakefield. Deposit of 1*l.* required.

JUNE 29.—**Lowestoft.**—WARD PAVILION.—The Urban Sanitary Authority invite tenders for the erection and completion of an additional ward pavilion, and for additions to the administrative block at the Sanatorium, Rotterdam-road. Plans, etc., may be seen, and bills of quantities with forms of tender may be obtained, at office of Mr. Geo. H. Hamby, A.M.Inst.C.E., Borough Surveyor, Town Hall, Lowestoft, on payment of the sum of 2*l.*

✱ JUNE 29.—**Plaistow.**—NEW WARD BLOCK.—The Trustees of St. Mary's Hospital for Women and Children invite tenders for the erection of a new ward block in Upper-road, Plaistow, E. See advertisement in this issue for further particulars.

✱ JUNE 30.—**Barnet.**—SCHOOL.—The Herts C.C. Education Committee invite tenders for a new C.C. school at Barnet. See advertisement in this issue for further particulars.

JUNE 30.—**Manchester.**—LAVATORY.—Manchester Corporation Sanitary Committee invite tenders for the construction of an underground lavatory for males at the Poultry Market, Shudehill, Manchester. Drawings may be seen, and specification, etc., obtained, at the office of the City Surveyor, Town Hall, Manchester, on payment to the City Treasurer of 1*l.* 1s.

✱ JULY 2.—**Hungerford.**—SCHOOL.—The Berkshire Education Committee invite tenders for a new school at Hungerford, Berks. See advertisement in this issue for further particulars.

✱ JULY 3.—**Guildford.**—RECEIVING HOME.—The Guardians of the Guildford Union invite tenders for a receiving home for children, Guildford. See advertisement in this issue for further particulars.

JULY 5.—**Blackburn.**—ERECTION OF HIGHER ELEMENTARY SCHOOL AND SWIMMING BATH.—The Corporation of Blackburn invite tenders for the erection of the new higher elementary school and swimming bath on Blakey Moor. Forms of tender, etc., can be obtained from the joint architects, Messrs. Briggs & Wolstenholme and Messrs. Stones & Stones, Richmond-terrace, Blackburn, on deposit of the sum of 1*l.* 1s.

✱ JULY 6.—**Luton.**—LIBRARY.—The Luton B.C. invite tenders for a new public library. See advertisement in this issue for further particulars.

JULY 14.—**Kendal.**—LIBRARY WORKS.—Kendal T.C. invite tenders for the purchase and removal of the western portion of the old public library building; also the removal and re-erection of the eastern portion of the said building, as well as the poultry market, upon a site to be fixed at the Parkside-road depôt. Conditions and forms of tender may be obtained on application to Mr. F. W. Oxberry, Borough Surveyor, Town Hall, Kendal.

✱ JULY 20.—**East Ham.**—SCHOOLS.—The East Ham Education Committee invite tenders for school buildings. See advertisement in this issue for further particulars.

NO DATE.—**Clydach.**—MORIAH BAPTIST CHURCH, YNISTAWE—NEW MANSE.—Plans, etc., may be seen with Mr. Thomas Rhys, Sunnybank, Ynistawe.

NO DATE.—**Dublin.**—NEW PEMBROKE DISPENSARY, COOMBE HOSPITAL.—Tenders are required for above. Plans can be seen, and bills of quantities had, on payment of 1*l.*, from Mr. Fredk. Higginbotham, M.Inst.C.E.I., 9, Lower Sackville-street, Dublin.

NO DATE.—**Portsmouth.**—NURSES' HOME.—The Committee of Management invite tenders for the erection of a nurses' home at Royal Portsmouth, Portsea, and Gosport Hospital. The plans, etc., may be seen upon application at the offices of the architect, Mr. C. W. Bevis, F.R.I.B.A., Elm-grove-chambers, Southsea. A copy of the bills of quantities will be supplied by the architect upon payment of a deposit of 2*l.* 2s.

ENGINEERING, IRON, AND STEEL.

JUNE 14.—**Keighley.**—SUPER-HEATERS.—The Corporation invite tenders for three super-heaters for Lancashire boilers. Specification, etc., may be obtained at the Engineer's Office, Coney-lane, Keighley.

JUNE 15.—**London.**—GIRDER BRIDGES.—The Bengal and North-Western Railway Company, Ltd., invite tenders for the supply and delivery of girder bridges (five 40-ft., five 20-ft., four 12-ft., and twenty-six 6-ft. spans), as per specification to be seen at the company's offices, 237, Gresham House, Old Broad-street, London, E.C. For each specification a fee of 10s. will be charged, which cannot, under any circumstances, be returned.

JUNE 18.—**Dudley.**—ELECTRICAL PLANT.—The Guardians invite tenders for the supply, delivery, and erection of a 10-h.p. motor, with shafting and belting, in the Workhouse laundry. Specification, etc., may be obtained upon application to Mr. Gains W. Coster, Clerk to the Guardians, Union Offices, St. James's-road, Dudley.

JUNE 19.—**Glasgow.**—PLANT.—The Corporation invite tenders for the oxidiser plant, consisting of oak drums, pitch-pine storage vats, steel shafting, clutches and gearing, small air compressor, malleable iron and lead piping, and electric motors required for the Shieldhall Outfall Works. Specifications, etc., may be obtained at the Office of Public Works, City Chambers, 64, Cochrane-street, by depositing 5*l.* Plans, etc., may be seen, and further particulars obtained, on presentation of the specification at the office of the consulting engineer, Mr. Wm. D. Hamilton, M.Inst.M.E., 59, Bath-street, Glasgow.

JUNE 19.—**Trumfleet, Doncaster.**—BRIDGE.—The West Riding Highways Committee invite tenders for the reconstruction in masonry, concrete, and steel joists of a small bridge known as pit bridge, situate over Engine Dike at Trumfleet, in the Rural District of Doncaster. Plans may be seen, and specification, etc., obtained, at the office of Mr. F. G. Carpenter, West Riding Surveyor, County Hall, Wakefield. A deposit of 1*l.* will be required. Cheques, etc., must be made payable and forwarded to "The West Riding Treasurer," at the County Hall, Wakefield.

JUNE 21.—**Eccles.**—WATER SOFTENING AND PURIFYING PLANT.—The Eccles Corporation Electricity Committee invite tenders for the supply and erection at the Electricity Works, Cawdor-street, Patricroft, of a water softening and purifying plant. Specifications, etc., may be obtained from the Borough Electrical Engineer, Cawdor-street, Patricroft, on payment of a deposit of 1*l.* 1s.

JUNE 21.—**Manchester.**—STEEL JOISTS.—The Rivers Committee invite tenders for the supply and delivery to the Corporation Sewage Works, Davyhulme, Urmston, of 52 tons or thereabouts of rolled steel joists. Forms of tender, etc., may be obtained on application to the Secretary of the Rivers Department, Town Hall, Manchester.

JUNE 21.—**Stockport.**—BRIDGE.—The Borough Extension Committee invite tenders for the labour and materials required in the erection of a bridge over the Ashton Canal at Broadstone-road. The plans, etc., may be seen at the office of Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Town Hall, Stockport, and the general conditions, etc., may also be obtained on payment of 2*l.* 2s.

✱ JUNE 22.—**Willesden.**—MOTOR FIRE ENGINE.—The Willesden D.C. invite tenders for a fire brigade petrol motor, combining motor fire engine, hose, tender, and fire escape. See advertisement in this issue for further particulars.

✱ JUNE 28.—**Edinburgh.**—TIMBER BRIDGE.—The Secretary of State for War invites tenders for erection of timber bridge over the waters of Leith. See advertisement in this issue for further particulars.

✱ JUNE 28.—**Southampton.**—BRIDGEWORK.—The Southampton C.C. invite tenders for the following work:—(1) Erection of brick bridge; (2) strengthening of small three-span bridge; (3) strengthening of small two-arched bridge. See advertisement in this issue for further particulars.

JUNE 30.—**Cardiff.**—HEATING APPARATUS.—St. Catherine's Church Committee, Cardiff, request tenders for installing a new heating apparatus in the church. For particulars apply Secretary, 14, Pontcanna-road.

JULY 31.—**Johannesburg.**—METERS.—The Municipal Council of Johannesburg invite tenders for Contract No. 748:—Supply and delivery of 4-in. waste water meters. Specifications, etc., may be viewed free at Messrs. E. W. Carling & Co.'s offices, St. Dunstan's-buildings, St. Dunstan's-hill, E.C. (Mr. G. S. Burt Andrews, Town Engineer), but a deposit of 1*l.* 1s. is required for the supply of copies.

AUGUST 4.—**Melbourne, Australia.**—OVERHEAD TRAVELLING CRANE.—Supply of one overhead travelling crane. Tender form, etc., can be obtained on application to Messrs. McIlwraith McEacharn & Co., Ppty., Ltd., Billiter-square-buildings, London, E.C., Agents for Melbourne City Council, by depositing the sum of 1*l.* 1s.

MISCELLANEOUS.

JUNE 15.—**Aldershot.**—VARIOUS.—The U.D.C. invite tenders for the following works:—(2) Painting and repairs to tip carts, sweepers' trucks, etc.; (3) supply of Portland cement for one year. Specifications may be seen, and all further particulars obtained, upon application to Mr. Fred C. Uren, A.M.Inst.C.E., the Council's Surveyor, between the hours of 9 a.m. and 5 p.m.

JUNE 16.—**Cranbrook.**—STEAM ROLLING.—Cranbrook R.D.C. invite tenders for steam rolling and scarifying during the ensuing season. Forms of tender must be obtained of Mr. T. H. Crampton, Clerk, Cranbrook.

JUNE 16.—**Wallsend.**—FENCING.—Tenders are invited for the erection of fencing at Miller's-lane, between Little Benton-road and Wallsend. Drawings may be seen at, and forms of tender may be obtained, from the City Engineer's office, Town Hall, Newcastle-upon-Tyne.

JUNE 17.—**Cork.**—SCAVENGING.—Cork R.D.C. invite tenders for removal of refuse, etc. Official forms may be obtained at the Board-room, Workhouse.

JUNE 18.—**Halifax.**—CABLE.—The Tramways and Electricity Committee of the Halifax Corporation invite tenders for the supply of lead-covered and paper-insulated cable for their electricity undertaking. Full particulars may be obtained on application to the General Manager, Tramways and Electricity Department, Skircoat-road, Halifax. Tenders must be accompanied by the sum of 5*l.*

JUNE 19.—**Longford.**—ROLLING.—Longford C.C. invite tenders for steam rolling certain roads near Longford. Copies of specifications may be seen in Secretary's Office, Longford.

JUNE 21.—**Monaghan.**—TEDAVNET NEW BURIAL GROUND.—The R.D.C. invite tenders for the fencing, embellishment, laying-out, and full completion of the new burial ground at Mullanarockan, within said district in the County of Monaghan. Plans, etc., can be seen on application to the Engineer, Mr. Patrick O'Neill, of Tirkeenan, Monaghan, who will give all necessary information, or at the Board-room, Monaghan Workhouse.

JUNE 22.—**Gosforth.**—TEAM LABOUR.—Gosforth U.D.C. invite tenders for team labour for a period of twelve months. Particulars may be obtained on application to the Engineer and Surveyor, Mr. George Nelson, A.M.Inst.C.E., Council Chambers, High-street.

JUNE 25.—**Harrow-on-the-Hill.**—GAS FOR PUBLIC LIGHTING.—The U.D.C. invite tenders for the supply of gas to the public lamps. Particulars may be obtained from Mr. John Strachan, Clerk to the Council, Council Offices, Harrow-on-the-Hill.

JUNE 28.—**Droxford.**—STEAM ROLLERS, ETC.—The R.D.C. of Droxford invite tenders for the hire of steam rollers and scarifiers for use on the main and district roads. Forms of tender, etc., may be obtained of Mr. H. Godfrey Pearson, Clerk, Bishop's Waltham, Hants, or of Mr. A. V. Carter, District Surveyor, Droxford, Hants.

JUNE 29.—**West Hartlepool.**—FENCING.—The Corporation invite tenders for the supply and delivery of wrought-iron unclimbable fencing, in accordance with specification to be seen at office of Mr. Nelson F. Dennis, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Buildings.

JULY 3.—**Dorset.**—STEAM ROLLING.—The C.C. of Dorset invite tenders for steam rolling and scarifying, etc., the rural main roads of the county. Specifications, etc., can be obtained from Mr. Walter J. Fletcher, County Surveyor's Office, Wimborne, Dorset.

JULY 20.—**Whitehaven.**—LIGHTING.—The Whitehaven Harbour Commissioners invite tenders for lighting the Harbour quays, etc., for five years. Application must be made to the Harbour Master for particulars.

NO DATE.—**Newbury.**—FENCING.—Designs and prices are invited for about 700 yds. of unclimbable iron fencing, with suitable gates and wicket gate, for enclosing the new cemetery site. Mr. S. J. L. Vincent, Borough Surveyor.

PAINTING, etc.

JUNE 14.—**Bristol.**—PAINTING.—Bristol Education Committee invite tenders for the painting, colouring, etc., of certain schools. Specifications, etc., may be obtained from Mr. Peter Addie, Exchange, Corn-street, Bristol, on payment of a deposit of 1*l.* 1s.

JUNE 14.—**Carlisle.**—PAINTING.—The Education Committee invite tenders for painting and other works required to be done at three of the elementary schools. Specification, etc., may now be obtained from Mr. Henry C. Marks, M.Inst.C.E., surveyor, 36, Fisher-street, Carlisle, on payment of 10s. 6d.

JUNE 14.—**Govan.**—PAINTING.—The Govan Combination P.C. invite tenders for painter work required for Poorhouse additions, Merryflatts, Govan. Plans may be seen, and copies of schedules had, on application to the architects, Messrs. Thomson & Sandilands, 4, Jane-street, Blythswood-square, on payment of 10s.

JUNE 14.—**Wallsend.**—PAINTING, ETC.—The Corporation of Wallsend invite tenders for the cleaning and painting of the Richardson Dees Schools (inside only), Buddle Schools (outside only), St. Columba's Schools (inside only), and the Church of England Schools (inside only). Particulars, etc., may be had on application to the Borough Surveyor, Town Hall, Wallsend.

JUNE 15.—**Nottingham.**—PAINTING, ETC.—Painting, washing, and whitewashing, etc., at the Nottingham General Hospital. Particulars may be had on application to Mr. E. M. Keely, Secretary, General Hospital, Nottingham.

JUNE 15.—**West Suffolk.**—PAINTING, ETC.—The Education Committee invite tenders for painting, etc., at the following Council schools:—Brandon High-street, Nayland, Newmarket St. Mary, Stanton. Specifications, etc., may be obtained on application to the Building Inspector, Mr. A. Ainsworth Hunt, Shire Hall, Bury St. Edmund's.

JUNE 17.—**Hull.**—PAINTING, ETC.—Hull Education Committee invite tenders for painting, colouring, whitewashing, etc., certain of their schools. Particulars, etc., can be obtained at offices of Mr. J. T. Riley, Secretary of Education, Education Offices, Albion-street, Hull.

JUNE 17.—**Wandsworth.**—PAINTING.—The Guardians invite tenders for painting works at the Infirmary. Forms of specification, etc., can be obtained at offices of Mr. F. W. Piper, Clerk, Union Offices, St. John's-hill, Wandsworth, S.W., upon payment of a deposit of 1*l.* for each set.

JUNE 19.—**New Shoreham.**—PAINTING, ETC.—West Sussex C.C. Roads and Bridges Committee invite tenders for the cleaning, scraping, and painting of Norfolk Suspension Bridge, at New Shoreham. Specification, etc., may be obtained on application to Mr. H. W. Bowen, County Surveyor, Worthing-road, Horsham.

JUNE 21.—**Hastings.**—PAINTING, ETC.—Hastings Education Committee invite tenders (from local tradesmen) for painting, limewashing, repairs, etc., at several of the schools during the summer holidays. Specifications may be obtained at the office of the Borough Engineer, Town Hall, Hastings.

✱ JUNE 21.—**Hendon.**—PAINTING.—The Managers of the Central London Sick Asylum District invite tenders for painting, etc., at their asylum in Colindale-avenue, Hendon, N.W. See advertisement in this issue for further particulars.

✱ JUNE 21.—**London.**—PAINTING.—The Managers of the Central London Sick Asylum District invite tenders for painting, etc., at their asylum in Cleveland-street, W. See advertisement in this issue for further particulars.

JUNE 22.—**Isleworth.**—PAINTING.—The Borough of Richmond (Surrey) and the Heston and Isleworth Urban District Joint Isolation Hospital Committee invite tenders for painting, distempering, and other works at the Mogden Isolation Hospital, near Kneller Hall, Isleworth. Forms of specification, etc., can be obtained upon written application to the Clerk to the Committee at 213, High-street, Hounslow.

JUNE 22.—**West Ham.**—PAINTING, ETC.—The B.C. invite tenders for painting, cleansing, repairs, etc., of public buildings. Specification, etc., may be obtained at the office of Mr. John G. Morley, Borough Engineer, Town Hall, West Ham, E., upon payment of 1*l.*

JUNE 24.—**Great Horton.**—PAINTING.—Painting, inside and outside, of Great Horton Primitive Methodist Chapel during September. Chapel-keeper will show the premises, and a copy of specification can be obtained from him, price 2s. 6d. each.

JUNE 28.—**Widnes.**—PAINTING, ETC.—The Widnes Education Committee invite tenders for repairs, colouring, cleaning, and painting at the various

Council and Non-Provided Schools. Specifications may be seen any day at the Education Offices, Town Hall, Widnes.

✱ JULY 1.—**London, S.E.**—PAINTING, ETC.—The Guardians of the Southwark Union invite tenders for painting, cleaning, etc., work at their Southern Relief Station, Boyson-road, Walworth, S.E. See advertisement in this issue for further particulars.

✱ JULY 1.—**London, S.E.**—PAINTING, ETC.—The Guardians of the Southwark Union invite tenders for painting, cleaning, etc., at their Infirmary, East Dulwich-grove, S.E. See advertisement in this issue for further particulars.

ROADS SANITARY, AND WATER WORKS.

JUNE 14.—**Bristol.**—TAR PAVING.—The Bristol Education Committee invite tenders for relaying and refacing playgrounds of the Council schools. Copies of the specifications may be obtained from Mr. Peter Addie, Exchange, Corn-street, Bristol.

JUNE 14.—**Frimley.**—ROAD WORKS.—The U.D.C. of Frimley invite tenders for the widening and improvement of the roadway, including the construction of a retaining wall and granite pitching, at Sturt-lane Bridge, Frimley Green. The drawings, etc., may be seen, and forms of tender, etc., obtained, from Mr. T. Clement Jones, C.E., the Engineer and Surveyor to the Council, Municipal Buildings, Camberley, upon payment of a deposit of 1*l.*

JUNE 14.—**Oadby, Leicestershire.**—DRAINAGE, ETC.—The Oadby P.C. invite tenders for drainage and laying out work in connexion with the extension of Oadby Cemetery. Copies of quantities can be obtained from the surveyors, Messrs. Langley & Baines, 16, Friar-lane, Leicester, upon deposit of 1*l.* 1s.

JUNE 14.—**Rayleigh.**—SEWER.—Rochford R.D.C. invite tenders for constructing about 142 yds. of sewer at Castle-lane, Rayleigh, in accordance with a plan, etc., which may be seen on application to Mr. H. T. Sidwell, Surveyor, Rayleigh.

JUNE 14.—**Swansea.**—CRAY WATER SUPPLY.—LINE OF PIPES No. 2.—The Council of the Borough of Swansea invite tenders for the construction of a line of pipes, 24-in. diameter, and about twenty miles in length. Drawings, etc., may be seen at the office of Mr. R. H. Wyrill, the Waterworks Engineer, from whom forms of tender may be obtained on payment of 1*l.* 1s.

JUNE 15.—**Whalton.**—SEWER.—Tenders are invited for the construction of about 900 lin. yds. of 6-in. sanitary pipe sewer, together with the necessary manholes, etc., at Whalton. Specifications, etc., may be inspected on application at the office of Mr. J. Jameson, surveyor, Ponteland.

JUNE 16.—**Croniwell.**—SEWAGE WORKS.—Lanchester R.D.C. invite tenders for Croniwell Sewage Disposal Works (proposed extensions). Plans, etc., may be seen at the office of Mr. G. W. Westgarth, Surveyor, Lanchester, any day by arrangement.

JUNE 17-23.—**Dunbar.**—NEW SERVICE TANK AT BROOMHOUSE.—The Provost, Magistrates, and T.C. of the Burgh of Dunbar invite tenders for the construction of a new service tank. Drawings may be seen at the office of the engineers, Messrs. Warren & Stuart, 94, Hope-street, Glasgow, where copies of the specification, etc., can be obtained on payment of 1*l.* 1s. An assistant engineer will meet intending offerers at Dunbar Station at 11.4 a.m. on June 17, to show them the site of the new works.

JUNE 17.—**Mitcham.**—KERB.—Croydon R.D.C. invite tenders for providing and laying about 2,400 yds. run of granite kerb in the Parish of Mitcham. Forms of tender and a copy of the specification may be obtained from Mr. J. S. Killick, A.M.Inst.C.E., the Council's Highway Surveyor, at the Council Offices, Katharine-street, Croydon.

JUNE 21.—**Belfast.**—PAVING.—Great Northern Railway Company (Ireland) Directors invite tenders for the paving with square stone setts of portion of roadway in their Belfast Goods Yard. Plan and specification at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens-street Terminus, Dublin, or copies of them at the office of the District Engineer, Belfast. Forms of tender on payment of 1s. each.

JUNE 21.—**Bishopbriggs and Auchinairn.**—SEWAGE DISPOSAL WORKS.—The District Committee of the Lower Ward of the County of Lanark invite tenders for the construction of about 800 sq. yds. of continuous filters, etc. Drawings may be seen at the office of Messrs. Warren & Stuart, civil engineers, 94, Hope-street, Glasgow, where copies of the specification, etc., may be obtained on payment of 1*l.* 1s. An assistant engineer will meet intending offerers at Bishopbriggs Station at 11 a.m. on Tuesday, 15th current, to show them over the site of the new works.

JUNE 21.—**East Cowes.**—BORE TUBE.—The U.D.C. of East Cowes invite tenders for the sinking of an 11-in. bore tube from the bottom of the present well at their waterworks. Plans, etc., can be seen, and all information obtained, from Mr. Albert E. Barton, Surveyor to the Council, Town Hall, East Cowes.

JUNE 21.—**Keighley.**—STREET PAVING.—Keighley R.D.C. invite tenders for the paving of Bar-lane, Riddlesden. Plans may be seen, and bills of quantities, etc., obtained, from Mr. Thomas Burton, 248, Oakworth-road, Keighley.

JUNE 21.—**Poole.**—NEW WATER SUPPLY.—The Corporation invite tenders for providing, laying, and jointing certain connecting mains and fittings, providing and erecting a gas engine and pumps, and certain measuring apparatus. The drawings may be inspected, and copies of the conditions, etc., obtained, at the offices of the engineer, Mr. W. Matthews, 39, Victoria-street, Westminster, or at the Municipal Offices, Poole.

✱ JUNE 21.—**Wandsworth.**—PAVING AND MAKING-UP ROADS.—The Wandsworth B.C. invite tenders for making-up and paving part of Southcroft-road, Streatham. See advertisement in this issue for further particulars.

JUNE 23.—**Flimwell.**—DRAINAGE.—Ticehurst Guardians invite tenders for the construction of a sewage tank, etc., in connexion with drainage of the Ticehurst Union Workhouse at Flimwell. Plans, etc., may be seen at the office of Mr. W. E. Mitchener, at Hurst Green.

JUNE 25.—**Merton.**—MAKING-UP.—Merton U.D.C. invite tenders for making-up Claremont-avenue, Richmond-avenue, and Station-road. Plans, etc., may be seen, and forms of tender obtained, on payment of 2*l.*, on application to Mr. G. Jerram, Surveyor, Council Offices, Merton.

JUNE 26.—**Wallsend.**—WIDENING.—Tenders are invited for works of widening the main road adjoining the cemetery (Church Bank), including the removal and re-erection of palisading and entrance gates, macadamising, etc. Specifications for the work may be seen on application to the Borough Surveyor, Town Hall, Wallsend.

✱ JUNE 28.—**Edinburgh.**—MAIN DRAINS.—The Secretary of State for War invites tenders for laying main drain for sewage and surface water from the Redford Estate. See advertisement in this issue for further particulars.

JUNE 29.—**Wembley.**—MAKING-UP.—Wembley U.D.C. invite tenders for the making-up of the first and second portions of Lancelot-road (Nos. 1 and 2 Contracts). The drawings, etc., may be seen at the office of Mr. Cecil R. W. Chapman, the Surveyor to the Council, at the Public Offices, Wembley. Copies of the quantities, etc., may be obtained at office of Mr. Fredk. W. Rodd, Clerk to the Council, Public Offices, Wembley, upon payment of a deposit of 3*l.* 3s.

JUNE 30.—**Horsham.**—SEWERAGE.—Horsham U.D.C. invite tenders for the execution of works of sewerage in the Little Haven District, Horsham. Copies of specification, etc., may be obtained on application to the Clerk of the Council, Mr. S. Mitchell, at his office, 14, Market-square, Horsham, on depositing a cheque for 2*l.* 2s. The works will be carried out in accordance with the drawings, etc., prepared by the Council's Surveyor, Mr. R. Renwick, from whom further information can be obtained.

JULY 3.—**Swansea.**—PAVING.—The Local Education Committee invite tenders for the paving with tar macadam of a portion of the playgrounds of the following Council schools:—Terrace-road, Dyfatty, Plasmarl, and Martin-street, Morriston. Full particulars may be obtained from Mr. Marcus Hoskins, F.S.I., Borough Estate Agent Coleridge House, Swansea.

SEPTEMBER 1.—**Astrachan.**—WATERWORKS, ETC.—The Municipal Council of Astrachan (Russia) invite tenders for the construction of waterworks in Astrachan, the rebuilding of an aqueduct, and also the building of new slaughter-houses. For further particulars write to the Municipal Council of Astrachan.

SEPTEMBER 1.—**Brisbane.**—WATER PIPES.—Brisbane Board of Waterworks invite alternative tenders for 42-in. and 48-in. steel pipes, or 42-in. and 48-in. wrought-iron pipes, or 42-in. and 48-in. cast-iron pipes. Specifications, etc., may be obtained at the office of the Engineer to the Agent-General for Queensland, 409 and 410, Strand, London, W.C., on payment of a fee of 3*l.* 3s.

NO DATE.—**Bishopstawton.**—WATER MAIN.—Barnstaple Water Company invite tenders for excavating the pipe trench and other work in connexion with an extension of main to Bishopstawton. Specification may be seen on application. Mr. C. W. Parkin, Secretary, Bridge-chambers, Barnstaple.

NO DATE.—**Haddington.**—WATER PIPE.—Estimates wanted for laying a new water pipe across the River Tyne immediately above the Nungate Bridge, Haddington. The specification may be seen in the hands of Mr. G. H. Stevenson, Town Clerk, Haddington.

NO DATE.—**Nappagh.**—DRAINAGE SCHEME.—Tenders are invited for the draining of Laraghwean Lake, Shercock, in accordance with plans, etc., prepared by Mr. P. J. Brady, civil engineer, Broomfield House, Ballyhaise, and to be seen at the residence of Mr. Joseph Boyle, Mullin, Shercock.

STONES, MATERIAL, AND STORES.

JUNE 14.—**Keighley.**—MATERIALS.—Keighley Gas Committee invite tenders for the supply of materials required during twelve months (cast-iron pipes and other castings, B. O. vitriol, lime). Particulars, etc., can be obtained on application to Mr. John Laycock, Engineer, Gas Offices, Cook-lane, Keighley.

JUNE 14.—**Ware.**—GRANITE SPALLS.—The Guardians of the Ware Union invite tenders for the supply of 140 tons of Guernsey granite spalls. Mr. Geo. H. Gisby, Clerk to the Guardians, Ware, Herts.

JUNE 15.—**Northfleet.**—GRANITE KERB.—Northfleet U.D.C. invite tenders for 410 yds. run and seven corner circular sets of 12 in. by 6 in. granite kerb. Form of contract, etc., may be seen at the Surveyor's Office, situate The Hill, Northfleet.

JUNE 15.—**Northfleet.**—MATERIALS.—Northfleet U.D.C. invite tenders for stores, etc. Full particulars and forms of contract may be seen at the offices of the District Council, The Hill, Northfleet.

JUNE 16.—**Enfield.**—GRAVEL.—The U.D.C. of Enfield invite tenders for the supply of 750 tons (more or less) of coarse screened Hertfordshire or other approved gravel. Forms to be obtained from offices of Mr. T. W. Scott, Clerk to the Council, Public Offices, Enfield, Middlesex.

JUNE 16.—**Spalding.**—PIPES.—Spalding U.D.C. invite tenders for the supply of seven miles or thereabout of 12-in. internal diameter cast-iron pipes, etc. Specification, etc., may be obtained of Mr. Jno. Bailey, Town Surveyor, Spalding, upon receipt by him of a stamped addressed envelope and cheque or Bank of England note for the sum of 5*l.*

JUNE 16.—**Trimdon.**—STORES.—The Trimdon Coal Company invite tenders for the supply of timber, oils, grease, firebricks, and general stores for six months. For forms of tender application to be made to Mr. I. Penney, Deafhill Colliery, Trimdon Grange, S.O.

JUNE 17.—**Cardiff.**—PIPES.—The Corporation of Cardiff invite tenders for the supply of cast-iron socket pipes. Specification, etc., may be obtained, together with other information, on application at the office of Mr. C. H. Priestley, M.Inst.C.E., Waterworks Engineer, City Hall, Cardiff.

JUNE 17.—**Keighley.**—MATERIALS.—The Corporation invite tenders for the supply and delivery of ironmongery, iron castings, pitch, oil, broken limestone and granite, Yorkshire and concrete flags, earthenware pipes, cement, etc., required by the Borough Engineer's Department. Further particulars may be obtained from Mr. Walter Fowlds, Borough Engineer.

JUNE 18.—**Cleckheaton.**—ANNUAL CONTRACTS.—The Council invite tenders for stores, etc. Forms of tender, etc., may be had upon application at office of Mr. John H. Linfield, Clerk to the Council, Town Hall, Cleckheaton.

JUNE 21.—**Hull.**—GRANITE, ETC.—The Corporation invite tenders for about 800 tons 3 in. by 6 in. granite or whinstone setts. Forms of tender, etc., may be obtained at the City Engineer's Office.

JUNE 21.—**Kingston.**—GRANITE.—The Guardians of the Kingston Union invite tenders for the supply of 100 tons of best blue Guernsey granite spalls. Mr. Chas. W Dash, Clerk to the Guardians, Union Offices, Coombe-road, Kingston-on-Thames.

JUNE 21.—**Leeds.**—ARTICLES.—The Gas Committee of the Leeds Corporation invite tenders for supply of articles for twelve months. Samples of the various articles may be seen at the Stores Office, Meadow-lane, and forms of tender obtained, on application to Mr. R. H. Townsley, General Manager, Gas Offices, Leeds.

JUNE 21.—**London.**—STORES.—Great Western Railway Directors invite tenders for the supply of stores. Specifications, etc., may be obtained on application to the Stores Superintendent at Swindon.

JUNE 21.—**Middlesbrough.**—ROAD MATERIALS, SANITARY PIPES, TIMBER, SPECIAL CASTINGS, ETC.—The Streets Committee invite tenders for yearly contracts. Specifications, etc., may be obtained on application at the Borough Engineer's office.

JUNE 22.—**Gosforth.**—WHINSTONE.—Gosforth U.D.C. invite tenders for the supply of broken whinstone, etc., for a period of twelve months. Particulars may be obtained on application to the Engineer and Surveyor, Mr. George Nelson, A.M.Inst.C.E., Council Chambers, High-street.

JUNE 25.—**Harrow.**—GRANITE.—Harrow-on-the-Hill U.D.C. invite tenders for the supply of 2-in. and 1¾-in. broken granite, and 1-in. or ½-in. granite chippings. Tenders are also invited for the supply of coarse and fine gravel. No special form of tender required. Mr. John Strachan, Clerk to the Council, Harrow-on-the-Hill

JUNE 25.—**North Walsham.**—GRANITE.—The U.D.C. invite tenders for 500 tons of granite, broken to a 1¾-in. ring gauge, and 30 tons of granite chips. Mr. E. J. Simpson, Surveyor to the Council, North Walsham.

JUNE 26.—**Ossett.**—GRANITE.—Supply and delivery of granite and tar macadam. Full particulars, etc., may be had on application to Mr. H. G. Keywood, Borough Surveyor, Town Hall, Ossett.

JUNE 28.—**Ellesmere Port and Whitby.**—MATERIALS.—The U.D.C. invite tenders for the supply and delivery of materials. Forms of tender may be obtained upon written application to the Surveyor to the Council, Mr. J. M. Hudson, 1, Lower Mersey-street, Ellesmere Port, near Chester.

NO DATE.—**Devonport.**—METERS, ETC.—The Devonport Corporation Electricity Committee invite tenders for the supply of the undermentioned for a period of twelve months ended June 30, 1910:—Contract No. 1.—Direct current meters. Contract No. 2.—Paper insulated cables, rubber-covered wires, flexibles, and cut-outs. Contract No. 3.—Lubricating oils. Particulars and form of tender may be obtained on application to Mr. J. W. Spark, Borough Electrical Engineer, Newport-street, East Stonehouse, Devon, on deposit for each form of contract of 1*l.* 1s.

NO DATE.—**Keighley.**—PIPES, ETC., NEW SEWAGE-DISPOSAL WORKS, UNCRA.—Iron pipes, valves, etc., for tanks and filters. Mr. Walter Fowlds, A.M.Inst.C.E., Borough Engineer.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*ROAD FOREMAN	Hendon U.D.C.	117*l.* per annum	June 14
*INSTRUCTOR IN MANUAL TRAINING (WOOD)	Belfast Technical Institute...	130*l.* per annum	June 16
*STOREKEEPER	Public Wks. Dpt., N. Nigeria	300*l.*, etc., per annum	June 21
*DRAUGHTSMAN	East African Protectorate ...	160*l.*, etc., per annum	do.
*WATER ENGINEER	Bombay Corporation	See advertisement in this issue	July 1

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sim	June 16
*BUILDER AND CONTRACTOR'S PLANT, WOOD GREEN—Trinity-road, Wood Green	Bartram & Vaughan	do.
*FREEHOLD ESTATES, SUDBURY—At the Mart	H. E. Foster & Cranfield	do.
*BUILDER AND CONTRACTOR'S PLANT AND STOCK—On the Premises, Essex-st., N.E.	J. Hibbard & Sons	June 17
*FREEHOLD ESTATES, LOUGHTON AND ISLEWORTH—At the Mart	Cockett & Henderson	June 18
*IRONMONGER AND BRASS MERCHANT'S STCK., BALHAM, S.W.—On the Premises	J. T. Skelding & Holland	do.
*FREEHOLD BUILDING ESTATE, GOLDER'S GREEN, N.W.—At the Mart	Buckland & Sons	June 21
*SITE FOR COUNTRY HOUSES, SUSSEX—At the Mart	Tyler & Co.	June 22
*FREEHOLD BUILDING LAND (VARIOUS), MIDDLESEX—At the Mart	Edwin Fox & Bousfield	June 23
*FREEHOLD RESIDENCE, WHETSTONE—At the Mart	Charles Sparrow & Son	June 28
*FREEHOLD ESTATE, LANGLEY, BUCKS—Crown Hotel, Slough	Lee & Farr	June 29
*FREEHOLD RESIDENCE AND LAND, MAIDENHEAD—At the Mart	Edwin Fox & Bousfield	June 30
*FREEHOLD ESTATE, HARROW-ON-THE-HILL—At the Mart	Edwin Fox & Bousfield	do.
*FREEHOLD LAND, EDMONTON—Angel Hotel, High-road, Edmonton	William Stevens	July 1
*BUILDING ESTATE, TOOTING BROADWAY—At the Mart	Walton & Lee	July 6

Miscellaneous.

CAMBRIDGE UNIVERSITY.

For the proposed buildings of the Museum of Archæology and Ethnology a site is allotted at the corner of Downing-street and Tennis Court-road, to the east of Pembroke College. Mr. T. G. Jackson's designs are in harmony with his recent work in the adjacent Squire Law Library and Sedgwick Memorial Museum. The plans provide ample floor space for the display of exhibits, and the cost of the completed structure will, it is computed, exceed 30,000*l.* For the present only one of the three blocks will be erected—that is, for the laboratories, offices, and staff-rooms. The funds so far available amount to nearly 11,000*l.*, towards which sum the Foster family have contributed 6,000*l.* The Local Examinations and Lecture Syndicate have agreed to grant 2,500*l.* out of funds at their disposal towards the building fund of the lecture-rooms on the Mortlock site. The Agricultural Buildings will, it is expected, be ready for occupation in the October term. The cost of the fabric amounts to about 14,000*l.*, and that of the furniture, equipment, and other expenses is estimated at 3,500*l.*; Mr. Arnold Mitchell's designs are in the current Royal Academy exhibition. Mr. T. G. Jackson, R.A., has prepared plans for alterations of the north-west door of the Senate House, which was begun in 1722 and not finished until 1766. The design is commonly ascribed to James Gibbs; it has, however, been attributed to Sir James Burrough, who, it may be, completed the building after Gibbs's death in 1754. A valuable set of ninety-three Italian medals (XVth-XVIth centuries), by Cellini, Leoni, Pisanello, de' Pasti, Sperandio, etc., has been lent for exhibition in the Fitzwilliam Museum, from the collections of Mr. Max Rosenheim, Mr. Oppenheimer, Mr. T. W. Green, and Mr. G. Salting.

BRITISH FIRE PREVENTION COMMITTEE.

The Special Commission of the British Fire Prevention Committee left London for North Germany on Wednesday to study various matters relating to fire, more particularly in respect to theatre safety, petrol storage, warehouses, and shops. They will visit Berlin, Hamburg, and other cities, and issue a report on their visit, as on previous occasions.

MANSFIELD BY-LAWS.

Owing to the rapid growth of Mansfield, a number of outside builders are carrying on work in the town, and, remarked the Town Clerk (Mr. J. H. White) at the borough police-court a few days ago, the Borough Surveyor had great difficulty in getting some of them to comply with the by-laws. One of the by-laws which it was difficult to get them to observe was that which provided a certificate should be obtained certifying that houses were properly completed and fit for occupation before they were occupied. Mr. White appeared on behalf of the Mansfield Corporation to prosecute Samuel Litchfield, builder, of Nether Heage, Belper, for non-compliance with this by-law, and he told the Mayor (Alderman Taylor), Alderman Maltby, and Mr. H. Smith that the defendant had erected four dwelling-houses in New Victoria-street, and had allowed them to be occupied before they were completed in several respects. He received the usual notices from the Borough Surveyor on March 6, and they were not returned until April 24, but in the meantime the house had been occupied. In response to a letter from Mr. T. P. Collinge, the Borough Surveyor, the defendant called upon that official and said he would complete the houses within three days, but they were still in an unfinished condition to-day. The pipes were not properly connected, the guttering not completed, and the paving, ventilating pipes, and other work still required doing. The Highways Committee regarded the case as a serious one, and asked the Bench to impose a substantial penalty. The Borough Surveyor having given evidence, the Mayor said some builders seemed to think they could do as they liked, but they must be taught that they could not. Defendant would have to pay 2*l.* and costs, and the advocate's fee would also be allowed.—*Nottingham Guardian.*

ST. DEINIOL'S CHURCH, HAWARDEN.

Figures of Aristotle, St. Augustine, and Dante have been placed in niches outside the church, and the set of four will be completed with one of Bishop Butler, as a tribute to the late W. E. Gladstone. The figures have been sculptured by Mr. G. Walker.

A NATIONAL PARK, SWITZERLAND.

At a meeting of the Society for protecting the natural beauties of Switzerland, held recently in Berne, the question was considered of forming a national park for the preservation and cultivation of the country's fauna and flora. The commune of Zermat has offered a lease of a wide extent of land; an opinion obtains, however, that the proposed park could most suitably be established in the Lower Engadine.

CYFARTHFA PARK AND CASTLE, MERTHYR.

Mr. T. F. Harvey, Borough Engineer, is preparing plans for converting the castle for purposes of two secondary schools for 200 boys and girls, with a museum and art gallery, and a pupil teachers' centre. The castle, built in 1820 by Mr. R. J. Crawshay, was, together with the park of 112 acres, purchased a few months since from Mr. W. T. Crawshay, of Caversham Park, Reading, for 14,500*l.*, by the Merthyr Corporation, who bought an additional area of 47 acres for 4,000*l.* from Mr. Crawshay, and on June 5 opened the park to the public.

THE DIRECTORY OF CONTRACTORS.

The 1909 edition of "The Directory of Contractors and Public Works Annual," edited by Mr. M. Sharpe, and published by the *Contractors' Chronicle*, Ltd., 48, Gray's Inn-road, W.C., has been sent to us. The Directory, which is clearly printed and conveniently arranged and classified, contains a great deal of useful information, including lists of names of architects, builders, contractors, surveyors, and others connected with the building contractor's work; a short summary of some recent legal cases, and a great deal of other useful information. The work, so far as we have tested it, appears to be thoroughly reliable, and it cannot fail to be of considerable use to those engaged in the building and allied trades. The price is 15s.

THE CITY OF LONDON DIRECTORY.

The 1909 edition of this excellent work—the 39th annual edition—which includes a coloured map of the City, and the published price of which is 12s. 6d., has recently been issued from the offices of Messrs. W. H. & L. Collingridge, 148 and 149, Aldersgate-street. The Directory includes, amongst other features, a streets guide, alphabetical directory, trades guide, livery companies guide, list of liverymen voters, a biographical directory, Corporation directory including the Committees of the Court of Common Council, London County Council directory, including its Committees, public companies directory, etc. The officers of the Corporation are stated, and the representation of that body on the various governing bodies of London is given. In the City Companies' section the history of each guild is summarised, the benefits attaching to membership set forth, and the work undertaken in the interests of trade and technical education described. Other features of the "Directory" include portraits and short biographical sketches of the Aldermen, the high officers of the Corporation, the Members of Parliament for the City, and the Masters of City Companies; lists of members of the Lieutenancy and Lloyd's, etc. In the alphabetical, street, and trade sections is given a list of the firms carrying on business in the City, with also, in many cases, the names of individual partners. The work is so carefully edited and so well arranged and its usefulness so great that it may well be compared with the Post Office London Directory, one of the Directories being indispensable in most City offices in the "one square mile."

WINCHESTER CATHEDRAL.

The leading problem in connexion with these works is the question of how to deal with the dangerous state of the south wall of the nave or its isle, which has every indication of a want of immediate support. When Wykham buttressed the north wall there were no structures on that side, and he dealt freely with his plans and buttressed the wall surmounting the buttresses with pinnacles and wrought-iron finials. The latter were removed some years ago. On the south side Wykham found the Norman cloisters, and left them—a screen to the Norman wall and a support, no doubt. In Elizabeth's reign, when the lead roof and timbers was decayed, to obviate repairs Bishop Horne and the Chapter destroyed the cloisters, and thus weakened the wall. We believe, says the *Hampshire Advertiser*, that the architect and engineer consulted by the Dean and Chapter are now decided as to the preference for buttresses like Wykham's, and no doubt this will be carried out. During the recent removal of cases, etc., in the library and chapter-room, a bay of the south transept, several things were found, including encaustic tiles, and, we are informed, a roll of parchment which, unrolled, proved to be a conveyance, time Henry VIII., of the Abbey Church of Tewkesbury from the King to the town of Tewkesbury as a parish church.

PROPOSED STREET IMPROVEMENTS, CHESTERFIELD.

Mr. E. Dudley, F.S.I., Inspector of the Local Government Board, held an inquiry recently into an application by the Chesterfield Corporation to borrow a sum of 3,300*l.* for the purpose of widening and improving Lordsmill-street. Mr. Vincent Smith (Borough Surveyor) was present, and gave details of the scheme.

THE INIGO JONES SCREEN, WINCHESTER.

A plan has been prepared by the City Surveyor for the re-erection of the Inigo Jones screen in the Abbey Gardens. It is proposed to re-erect it in a line with the south end of the Abbey House. It will probably, if is stated, be some time before the screen is re-erected.

Patents.

APPLICATIONS PUBLISHED.*

8,736 of 1908.—William Ralph Bates and Percy Hutchinson Wilson: Hydraulic testing of pipes, cylinders, and the like.

10,043 of 1908.—John McNaull Wilson and Henry Ammond Harris: Paint and varnish removers.

10,127 of 1908.—William Storey: Apparatus for testing by gauging and measuring.

10,254 of 1908.—Johannes Avetician Calantarients: Building and other works construction and appurtenances to resist the action of earthquakes and the like.

11,566 of 1908.—William John Stewart: Construction of reinforced hollow concrete piles.

14,104 of 1908.—Arthur Chatwin: Firegrates and the like.

19,860 of 1908.—William Burrough Hill: Building bricks.

21,309 of 1908.—William David Mould: Securing of rain-water down spouts.

22,959 of 1908.—Christian Albert Jensen (Communication from Alcide Auguste Fabe): Reinforced concrete floors and like structures.

26,923 of 1908.—Friedrich Rahn: Door locks.

857 of 1909.—Arthur Charles Stevens: Locks.

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 25.—By R. LONGSTAFF & Co. (at Spalding).
Moulton, Lincs.—Freehold arable and pasture land, 210 a. (in lots) £12,770

By DREWEATT & WATSON (at Newbury).
Newbury, Berks.—Northbrook-st., Stapleton House, f., y.r. 70*l.* 2,250
Waldegrave-pl., freehold cottage 120
22 and 23, Cheap-st.; 12 to 17, New Market-st., f. 1,900
King's-rd., freehold meadow land, 3 a. 2 r. 11 p. 600

May 27.—By TOOTELL & GREEN (at Maidstone).
Loose, Kent.—Startups Quarry, 12 a. 2 r. 23 p., f. 600
Staplehurst, Kent.—Lingbar and Holtlea, f. .. 725

By STANFORD & BROOM (at Laxfield).
Laxfield, Suffolk.—Halls Farm, 84 a. 1 r. 37 p., f. 860
The Valley Farm, 44 a. 3 r. 37 p., f. 465
Station-rd., freehold shop, three houses, and 1 a. 350

May 28.—By HARRY BALL (at Bedford).
Bedford.—25, Wellington-rd., f., p. 395
34, Bromham-rd., f., y.r. 40*l.* 650
43, Hurst-gr., f., p. 270
1 to 6, Holt Cottages, f., w.r. 58*l.* 12s. 680
Kempston, Beds.—8, 10, and 12, Battenberg-st., f., y.r. 39*l.* 450

By G. B. HILLIARD & SON (at Chelmsford).
Springfield, Essex.—Old Lodge Farm, 249 a. 2 r. 32 p., f. 6,450

June 2.—By H. DONALDSON & SONS.
Holloway.—St. Johns-rd., f.g.r. 9*l.*, reversion in 76 yrs. 240
Calverley-gr., f.g. rents 11*l.*, reversion in 67 yrs. 250
Elthorne-rd., f.g. rents 12*l.* 12s., reversion in 57 yrs. 270
Norbury.—1, 3, 9, and 11, Stanford-rd., u.t. 93 yrs., g.r. 16*l.*, y. and e.r. 162*l.* 1,540

By DYER, SON, & HILTON.
Lewisham.—41, Clarendon-rd., u.t. 48½ yrs., g.r. 12*l.*, y.r. 45*l.* 201

By W. LEVENS & SON.
Beckenham.—49, Wickham-rd., f. 2,400

By WINCH & SONS (at Cranbrook).
Cranbrook, Kent.—Mount Ephraim Farm, 85 a. 3 r. 11 p., f. 2,000
Hartley Farm, 37 a. 1 r. 26 p., f. 1,300
Cuzco and 2 a., f. 1,200

By S. & G. KINGSTON (at Boston).
Freiston, Lincs.—Freehold farmhouse and market garden land, 45 a. 2 r. 3 p. 4,430
Fishtoft, Lincs.—Freehold arable land, 78 a. 2 r. 8 p. 2,950

By H. J. WAY & SON (at Newport).
Newport, I.O.W.—Hearn-st., a freehold site, ¼ a. 400
Carisbrooke, I.O.W.—Priory-rd., two freehold houses 415

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

**** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Best Stocks	1 6 6	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	,, delivered
Flettons	1 4 6	,, at railway depôt.
Best Fareham Red	3 12 0	,, ,, ,,
Best Red Pressed Ruabon Facing	5 0 0	,, ,, ,,
Best Blue Pressed Staffordshire	3 15 0	,, ,, ,,
Do. Bullnose	4 0 0	,, ,, ,,
Best Stourbridge Fire Bricks	3 14 0	,, ,, ,,
GLAZED BRICKS		
Best White and Ivory Glazed Stretchers	10 7 6	,, ,, ,,
Headers	9 17 6	,, ,, ,,
Quoins, Bullnose, and Flats	13 17 6	,, ,, ,,
Double Stretchers	15 17 6	,, ,, ,,
Double Headers	12 17 6	,, ,, ,,
One Side and two Ends	16 17 6	,, ,, ,,
Two Sides and one End	17 17 6	,, ,, ,,
Splays and Squints	15 7 6	,, ,, ,,
Best Dipped Salt Glazed Stretchers	10 7 6	,, ,, ,,
Headers	9 17 6	,, ,, ,,
Quoins, Bullnose, and Flats	13 17 6	,, ,, ,,
Double Stretchers	15 17 6	,, ,, ,,
Double Headers	12 17 6	,, ,, ,,
One Side and two Ends	16 17 6	,, ,, ,,
Two Sides and one End	17 17 6	,, ,, ,,
Splays and Squints	15 7 6	,, ,, ,,
Second Quality White and Dipped Salt Glazed	1 5 0	,, less than best.

BRICKS, &c. (*continued*).

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	,, ,,
Best Portland Cement	28 0	per ton, ,,
Best Ground Blue Lias Lime	19 0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	,, ,,
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	,, ,,
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	,, ,,

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer ,,	1 6	,, ,,
Greenshill ,,	1 10	,, ,,
Darley Dale in blocks	2 4	,, ,,
Red Corsehill ,,	2 2	,, ,,
Closeburn Red Freestone	2 0	,, ,,
Red Mansfield ,,	2 4	,, ,,

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. dep.
6 in sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. ,,
6 in. rubbed two sides ditto, ditto	2 6	,, ,,
3 in. sawn two sides slabs (random sizes)	0 11½	,, ,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	,, ,,
1½ in. to 2 in. ditto, ditto	0 6	,, ,,
HARD YORK—		
Scappled random blocks	3 0	per ft. cube, ,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft super. ,,
6 in. rubbed two sides ditto	3 0	,, ,,
3 in. sawn two sides slabs (random sizes)	1 2	,, ,,
2 in. self-faced random flags	0 5	,, ,,

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r.d.
20×12 ,, ,,	13 17 6	,, ,,
20×10 first quality ,,	13 0 0	,, ,,
20×12 ,, ,,	13 15 0	,, ,,
16×8 ,, ,,	7 5 0	,, ,,
22×10 best blue Portmadoc	12 12 6	,, ,,
16×8 ,, ,,	6 12 6	,, ,,
20×10 best Eureka unfading green	15 17 6	,, ,,
20×12 ,, ,,	18 7 6	,, ,,
18×10 ,, ,,	13 5 0	,, ,,
16×8 ,, ,,	10 5 0	,, ,,
20×10 permanent green	11 12 6	,, ,,
18×10 ,, ,,	9 12 6	,, ,,
16×8 ,, ,,	6 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000, at rly. depôt.
Hip and Valley tiles	3 7	per doz. ,,
Best Broseley tiles	50 0	per 1000 ,,
Do. Ornamental tiles	52 6	,, ,,
Hip and Valley tiles	4 0	per doz. ,,
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 ,,
Do. Ornamental do.	60 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 0	,, ,,
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 ,,
Do. Ornamental do.	54 6	,, ,,
Hip tiles	4 1	per doz. ,,
Valley tiles	3 8	,, ,,
Best "Rosemary" brand plain tiles	48 0	per 1000 ,,
Best Ornamental tiles	50 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 8	,, ,,
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 ,,
Do. pressed	47 6	,, ,,
Do. Ornamental do.	50 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 6	,, ,,
Staffordshire (Hanley) Reds or Brindled tiles	42 6	per 1000 ,,
Hand-made sand-faced	45 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 6	,, ,,

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0	
Deals: best 3 by 9	13 0 0	... 14 0 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0	
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best.	
Battens: seconds	0 10 0	,,	
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0	
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0	
Foreign Sawn Boards—			
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¾ in.	1 0 0	,,	

WOOD (*continued*).

BUILDING WOOD—(*continued*)—	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
,, ,, 3 in. by 9 in.	13 10 0	... 14 0 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
,, ,, 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	,,
Seconds, regular sizes	33 0 0	,,
Oddments	28 0 0	,,
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak logs—		
Large, per ft. cube	0 3 0	... 0 3 9
Small ,, ,,	0 2 6	... 0 2 6
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¼ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 4 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. ,, ,,	0 14 0	... 0 18 0
¾ in. by 7 in. white ,, ,,	0 10 0	... 0 11 6
1 in. by 7 in. ,, ,,	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns	7 10 0	... 8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
,, ,, Galvanised	17 0 0	... —
(*And upwards, according to size and gauge.)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 15 0	... —
,, ,, 24 g.	10 15 0	... —
,, ,, 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
,, ,, 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0	... —
,, ,, 22 g. and 24 g.	18 10 0	... —
,, ,, 26 g.	20 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
,, ,, 22 g. and 24 g.	14 15 0	... —
,, ,, 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
,, ,, ,, 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0
(Under 3 in., usual trade extras.)		

LEAD, &c. Per ton, in London.

	£	s.	d.		
LEAD—Sheet, English, 3lb. and up.	16	12	6	...	—
Pipe in coils	17	2	6	...	—
Soil pipe	19	2	6	...	—
Compo pipe	20	2	6	...	—
ZINC—Sheet—					
Vielle Montagne	26	10	0	...	—
Silesian	26	5	0	...	—
COPPER—					
Strong sheet ..... per lb.	0	1	0	...	—
Thin " ..... "	0	1	1	...	—
Copper nails ..... "	0	0	10	...	—
Copper wire ..... "	0	0	10	...	—
BRASS—					
Strong Sheet ..... "	0	0	11	...	—
Thin ..... "	0	1	0	...	—
TIN—English Ingots ..... "	0	1	5	...	—
SOLDER—Plumbers' ..... "	0	0	7	...	—
Tinmen's ..... "	0	0	9½	...	—
Blowpipe ..... "	0	1	0	...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1½d. " "
21 oz. thirds	3d. " "
" fourths	2½d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4½d " "
" fourths	4½d. " "
Fluted Sheet, 15 oz	3½d. " "
" 21 oz.	4½d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d. per ft. delivered.
¼ "	2⅝d. " "
½ "	2⅞d. " "
Figured, Oxford Rolled and "Oceanic" Glass, white	3½d. " "
" " tinted	5d. " "

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	1
" " " in barrels	"	0	2	2
" " " in drums	"	0	2	5
Boiled " " in barrels	"	0	2	5
" " " in drums	"	0	2	8
Turpentine in barrels	"	0	2	5
" in drums	"	0	2	7
Genuine Ground English White Lead	per ton	20	10	0
Red Lead, Dry	"	20	0	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c. Per gallon.

	£	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDARON (Carnarvonshire).—For completion of eight cottages. Mr. H. Clapham Lander, A.R.I.B.A., Effingham House, 1, Arundel-street, Strand, W.C.:—

J. Griffith	£2,840 0	J. T. Jones, Abererch, N. Wales	£2,218 16
W. & R. Jones	2,258 0		

BARGOED.—For erecting forty houses, for the "Graig Building Club." Mr. H. Gabe Jones, architect and surveyor, Hazeldene, Hengoed:—

	Per house.		Per house.
A. W. Davies	£228 0 0	D. Arthur, Glasbury House, Bargoed*	£199 7 0
H. J. Davis	208 10 9		
A. J. Colborne	207 6 0		
W. Cosslett	201 10 0		
Vodden & Lee	201 0 0	G. Barnett	175 10 0

BELPER.—For the erection of two children's homes, Holbrook-road, for the Guardians. Messrs. Hunter & Woodhouse, architects, Bridge-street, Belper:—

J. Dickinson	£1,325 0 0	J. W. Haynes, Belper*	£1,152 6 8
Wheeldon Bros.	1,240 0 0		
Evans Bros.	1,235 0 0	E. Morley & Son	1,148 3 0
Harris & Hunt	1,175 5 8		

BRIDGWATER.—For construction of a cloak-room for the girls' department, Eastover Council School, in Cornborough-place, for the Bridgwater Borough Education Authority:—

S. Palmer	£258 0 0	J. E. Fursland	£239 0 0
S. West	257 10 0	H. Westbury	234 14 8
Ashton & Son	250 0 0	Gleed Bros., Northgate, Bridgwater*	29 0
C. Bird	249 0 0		
J. H. Tapscott	245 10 0		

BRYNMAWR.—For pulling down old buildings and erecting a small post-office and telephone exchange. Mr. W. H. Dashwood Caple, F.R.I.B.A., 2, Church-street, Cardiff:—

J. Williams	£788 5 6	J. Jenkins, Brynmawr*	£597 0 0
Thomas & Sons	770 0 0		
Ebbw Vale Building Co.	713 1 2		

CAERAU (near Maesteg).—For erecting a church, for the Rev. J. Jones and Committee. Mr. G. E. Halliday F.R.I.B.A., 19, Castle-street, Cardiff:—

W. H. Evans	£4,468 17 7	Stevens, Bastow, & Co.	£3,994 0 0
D. W. Evans	4,395 3 0	Cox & Bardo	3,975 16 5
Evans & Jones	4,290 13 8	W. & J. R. Watson, Edinburgh*	3,876 0 0
Prothero	4,279 10 0		
I. Rees	4,159 0 0		
W. Symonds & Sons	4,050 0 0		

CANTERBURY.—For repairs, painting, etc., to 22, Lower Bridge-street, for the Corporation. Mr. A. C. Turley, City Surveyor, Guildhall-street, Canterbury:—
W. Bateman, St. Dunstan's-street, Canterbury* £147 17

CANTON (Cardiff).—For erecting a church in St. John's parish, for the Rev. H. J. Williams, rector, and Committee. Mr. G. E. Halliday, F.R.I.B.A., 19, Castle-street, Cardiff:—

Bosworth & Co.	£4,463 15 0
Cox & Bardo	4,365 17 3
Stevens, Bastow, & Co.	4,263 0 0
Blacker Bros.	4,095 0 0
E. Turner & Sons	4,070 0 0
G. Beames	3,926 5 0
W. Symonds & Sons, Cardiff*	3,771 0 0
Haines	3,672 0 0

CHELTENHAM.—For sewage purification works, etc., Haydon Farm, Cheltenham. Mr. J. S. Pickering, M.Inst.C.E., Borough Engineer, Cheltenham:—

A. Hill & Co.	£9,571 5 9	T. Vale & Sons, Ltd.	£8,240 12 4
E. Ireland	9,564 11 6	J. Byard & Sons	8,144 0 0
S. B. Dix	9,089 10 7	R. C. Brebner & Co.	8,075 17 10
J. Merritt	9,029 15 8	M. Williams & Co.	7,984 16 9
W. Cresswell & Co.	8,906 13 8	W. Cunliffe & Sons, Ltd.	7,809 13 4
H. Smith	8,607 1 3	T. Watson, Southall‡	7,580 17 0
B. Firth	8,361 2 4		
A. H. Price & Co.	8,310 9 5		
J. Riley	8,271 12 11		

‡ Recommended for acceptance.

CLAY CROSS (Derbyshire).—For laying new sewer for the Urban District Council:—

G. Griffin	£288 4 0	T. Beighton, Hepthorne-lane*	£221 0 0
E. Green	282 6 7	Cox & Co.	195 7 0
E. Fletcher	236 5 0		
W. W. Bateman	225 11 0		

DARTMOUTH.—For alterations and additions to the Subscription Rooms, and repairs, etc., to a cottage, South Town, for the Town Council. Mr. T. W. Joyce, Borough Engineer and Surveyor, Dartmouth:—

R. C. Pillar	£325 0 0
R. T. Pillar, Dartmouth*	318 0 0

EDMONTON.—For repairing, painting, and thatching at Huxley Farm, Hedge-lane, N., for Messrs. Clarke & Son, High Wycombe. Messrs. Stanley Parkes & Brown, surveyors, Tottenham, Enfield, and Hornsey:—

Groves & Son	£189 15 0
J. Stewart, Tottenham*	179 4 0

ELGIN (Scotland).—For laying 850 sq. yds. of concrete pavement, for the Town Council. Mr. Acton A. Turriff, Burgh Surveyor, Elgin:—

W. Jamieson	£176 11 0
Sellar & Co.	162 17 4
A. Davidson & Son	152 3 4
R. Fraser & Son, Elgin*	146 4 6

FROME.—For sewage disposal scheme (Contract No. 3), for the Urban District Council. Mr. F. W. Jones, A.M.Inst.C.E., Public Offices, Frome:—

R. C. Brebner & Co.	£7,960 18 11	P. Isley & Co.	£6,581 1 3
S. Wood	7,397 13 11	H. Ash	6,353 18 11
J. Merritt	6,914 10 9	Steer & Pearce	6,219 15 11
T. Watson	6,639 3 6	J. Riley, Cheltenham*	6,212 11 11
E. Ireland	6,637 12 6		

FROME.—For sewage disposal scheme (Contract No. 4), for the Urban District Council. Mr. F. W. Jones, A.M.Inst.C.E., Public Offices, Frome:—

Birch, Killon, & Co., Manchester*	£987 0	Ham, Baker, & Co.	£760 0

HAMMERSMITH.—For library alterations, Central Public Library, for the Borough Council. Mr. H. Mair, Borough Surveyor, Town Hall, Broadway, Hammersmith:—

Shannon, Ltd.	£378 15 6 or 276 15 6	Wake & Dean, Ltd.	£325 8 6
		Jarman & Co.	280 0 0
		Libraco, Ltd.	229 10 0

HEMEL HEMPSTEAD.—For repairs and decorations to Municipal buildings, for the Corporation. Mr. W. R. Locke, Borough Engineer and Surveyor, Town Hall, Hemel Hempstead:—

Glenister, Hemel Hempstead	£88 0 0

[Lowest of six tenders.]

HENDON.—For tarpainting 50,000 yds. super. of roads, for the Urban District Council. Mr. S. Slater Grimley, Engineer and Surveyor, Council Offices, The Burroughs, Hendon, N.W.:—

Coal Tar.

—	10,000 Galls. or under.	20,000 Galls. or under.	30,000 Galls. or under.
	d.	d.	d.
Bristowe & Co.	3¾‡	3¾‡	3¾‡
Grindley & Co., Ltd.	3¾	3¾	3¾
J. Smart & Son	3¾	3¾	3¾
E. Catchpole & Sons, Plough Bridge, Rotherhithe*	2 15/16	2 15/16	2 15/16

‡ Tarvia quoted for on rail at Hendon Station only in full truck-loads of twenty barrels each.

Tar-painting Roads.

—	25,000 yds. super.	50,000 yds. super.	75,000 yds. super.	100,000 yds. super.
	d.	d.	d.	d.
P. A. S. Distributors, Ltd.	1¼‡	1¼‡	1⅛‡	1⅛‡
Grounds & Newton Taroads Syndicate, Ltd., 9, Victoria-street, S.W.*	1¼‡	1⅛‡	1 1/16‡	1 1/16‡

‡ If tarvia used add ¼d. per square yard.

HEREFORD.—For building St. Nicholas Rectory, for the Rector and Churchwardens of St. Nicholas. Messrs. Nicholson & Hartree, architects, Offa-street, Hereford. Quantities by Messrs. H. H. Barber & Son, 22, Buckingham-street, Adelphi, W.C.:—

Bowers & Co.	£1,505 8	W. P. Lewis & Co.	£1,348 5
C. Cooke	1,482 10	E. W. Wilks	1,271 15
Beavan & Hodges	1,479 10	R. Preece*	1,216 0
W. Powell	1,359 0		

[All of Hereford.]

HODDESDON.—For drainage works for the Urban District Council. Messrs. J. Taylor, Sons, & Santo Crimp, engineers, Caxton House, Westminster:—

A. E. Nunn, & Co., Ltd., Finsbury House, Blomfield-street, E.C.*	£7,034 2

HOYLAND NETHER.—For sewage disposal works, Elsecar (Contract No. 1.—Filter beds, valve chambers, drains, etc.), for the Urban District Council. Mr. F. Hewitt, Engineer and Surveyor, Town Hall, Hoyland, near Barnsley:—

W. R. Unwin	£2,292 18 6
E. E. Dickinson	2,182 0 0
W. Waring & Sons	2,000 0 0
C. Green & Sons	1,997 0 0
C. Bushby & Sons, Leeds*	1,825 8 10

[Surveyor's estimate, £2,130.]

HENDON.—For additions to Infectious Diseases Hospital near Renters-lane, Hendon, N.W., for the Urban District Council. Mr. S. Slater Grimley, Engineer, Council Offices, The Burroughs, Hendon, N.W.:—

—	No. 1.	No. 2.	No. 3.	No. 4.	Extra.*
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Croggon & Co.	575 0 0	—	—	—	60 0 0
F. & G. Foster	556 0 0	584 0 0	608 0 0	590 0 0	20 0 0
Harrison Smith Buildings, Ltd.	504 0 0	520 0 0	620 0 0	657 0 0	27 0 0
Ginger, Lee, & Co.	488 18 0‡	540 0 0	590 0 0	645 0 0	32 0 0
W. Harbrow	425 0 0	462 0 0	510 0 0	517 10 0	35 0 0
Humphreys, Ltd.	477 0 0	488 0 0	518 0 0	544 0 0	43 0 0
F. J. Hawkins & Co.	380 0 0	392 0 0	409 0 0	440 0 0	15 10 0
F. Smith & Co.	370 0 0	416 0 0	461 0 0	541 0 0	18 0 0
Boulton & Paul	369 6 0	390 6 0	440 6 0	419 6 0*	60 0 0

‡ Including £20 per cent. for two water-closets and slop sinks and cisterns.

No. 1. Building and works as per drawings and specification complete.

No. 2. For building and works, but if all partitions (except between nurses' day duty room and nurses' bedroom, which is to be in brickwork) 2½-in. Mack in plaster grout at joints, finished both sides with coat grey siraphite plaster and with ⅜-in. Mack lining nailed to wood framing, dipped in spelter instead of the stud and match-lined partitions and match-lining to inside of building and ceiling, but all else as Tender No. 1.

No. 3. For building and works, but with all external walls in Mack slabs 4 in. thick in plaster grout at joints (instead of wood framing covered with galvanised corrugated iron), and rendered on outside with Portland cement, and washed sand 1 to 2, ½ in. thick and pebble dashed, and with 2½-in. Mack partitions, and ⅜-in. Mack linings as Tender No. 2, but roof and everything else as Tender No. 1.

No. 4. For building and works, but with all external walls covered with a layer of No. 1 expanded metal, secured to wood framing rendered in cement and washed sand as last tender, but not pebble dashed, but rendering stippled with a sponge while wet, including Externit sheeting nailed to inside and ceilings, but with Mack partitions as in Tender No. 2, and including Externit roofing nailed to ⅜-in. rough boarding instead of corrugated iron and felt, but everything else as Tender No. 1.

* Extra only to either of tenders if with Callender's Jointless Floor and rounded corners in similar material in place of wood floor specified.

KING'S LYNN.—For erection of cow shelter, coach-house, and sundry alterations at "The Elms," for Mr. W. Wing. Messrs. Walker & Walker, architects and surveyors, Wisbech and Terrington. Quantities by the architects:—

Dye & Allen ..	£221 0 0	J. Holman	£195 0 0
Read & Wildbur	218 0 0	Barnes & Co....	192 0 0
Johnson & Son	201 6 6	Lawson & Co. ..	180 0 0
H. W. Reeder ..	200 0 0	Hampton	170 0 0
C. E. Green	199 0 0	Tash & Langley, King's Lynn*	169 19 0
J. Medwell	198 17 0		

LONDON.—For alterations to the Police Section House at Kennington-lane, London. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 8, Adelphi-terrace, Strand, W.C.:—

Mowlem & Co., Ltd.	£2,200	C. Ansell.....	£1,900
F. G. Minter	2,051	W. Smith & Son ..	1,895
Lorden & Son.....	1,975	Rice & Son.....	1,851
Holloway Bros.....	1,975	W. Eyre	1,850
F. & H. F. Higgs ..	1,960	Higgs & Hill, Ltd..	1,774
Appleby & Son	1,909	Prestige & Co.....	1,711

LONG ASHTON (Somersetshire).—For additions to sewage disposal and sewerage works, for the Rural District Council. Mr. A. P. I. Cotterell, M.Inst.C.E., 28, Baldwin-street, Bristol:—

Brebner & Co. ..	£357 10	Cowlin & Son, Stratton-street, Bristol*	£280 0
T. B. Cooper & Co.	330 0		
J. Coles & Son....	287 2		

MEETHE (near Southmolton).—For proposed new bridge, for Southmolton Borough and Southmolton Rural District Council. Mr. E. D. Groves, Borough Surveyor, Southmolton, and Mr. W. S. Gardner, Surveyor, Chittlehampton:—

Parsons & Sons	£395
Woolaway & Sons, Barnstaple*	352

MERTHYR TYDFIL.—For erecting new Y.M.C.A. buildings. Messrs. Ivor Jones & Percy Thomas, architects and surveyors, 18, St. Mary-street, Cardiff:—

—	Terra-Cotta.	Club-room.	Bath-stone.
	£	£	£
W. Brown	7,548	118	8,332
Williams & Son	7,314	90	7,314
Jones Bros.	7,040	105	6,940
E. R. Evans & Bros.	7,025	95	6,872
Knox & Wells	6,950	90	6,770
D. Davies	6,906	100	6,756
W. Thomas	6,896	87	6,721
J. Jenkins	6,857	92	6,717
N. Moss	6,813	144	6,988
Stephens & Bastow	6,444	87	6,235
W. Symonds & Sons	6,402	88	6,227
W. Williams	6,199	75	6,099
A. J. Colborne	5,871	77	5,780
D. W. Davies*	5,688	81	5,580

PORTSLADE-BY-SEA.—For the erection of a fire brigade station, for the Urban District Council. Mr. A. Taylor Allen, Town Surveyor:—
E. Clevett, 95, St. Andrew's-road, Portslade-by-sea £358
[Lowest tender.]

RUABON.—For 190 yds. of 9-in. sewer at Black Lion-road, Acrefair, Ruabon, for Wrexham Rural District Council. Mr. J. Price Evans, engineer, Argyle-chambers, Wrexham:—

L. Woodland & Co...	£155	W. F. Humphreys, Cefn*	£120
R. Williams	140	A. M. Macdonald	100

SHALFLEET (Isle of Wight).—For 1,200 yds. of 3-in. cast-iron water-main from Lucketts to Bouldnor, for the Rural District Council:—
G. Dowty, Freshwater, Isle of Wight*.. £217 17 9

SHERBORNE (Dorset).—For additions to Ladies' College. Messrs. J. Harding & Son, architects and surveyors, 58, High-street, Salisbury:—

Wort & Way ..	£6,042 0	Guppy & Son ..	£5,190 0
Parnell & Son ..	5,875 14	H. Gillingham, Sherborne* ..	5,167 0
Harris Bros.....	5,605 0		

STOWMARKET.—For Bond-street sewer, for the Urban District Council. Mr. G. W. Lingwood, Surveyor, 3, Butter Market, Stowmarket:—

T. Parkingson & Son	£365 0 0	L. Plummer....	£249 0 0
		E. Howes.....	195 0 0
Murray & Robinson	273 10 0	J. T. Gosling, Stowmarket*	136 5 9

TUNSTALL.—For tar-macadamising of walks at cemetery, for the Burial Board:—

	Carriage-way. Per yard.	Footpaths. Per yard.
	s. d.	s. d.
J. Hoult & Son	2 9	1 9
B. S. Jones.....	2 7	1 10
Ceeriog Granite Co., Ltd.....	2 3	1 9
Val de Travers Paving Co., Ltd.....	2 3	1 7½
Tarmac, Ltd.....	2 3	1 6
W. Shepherd & Sons.....	2 0	1 8
W. Bullock.....	1 8½	1 6
W. Williams, Etruria, Staffs*	1 7	1 6

WANSTEAD.—For laying of granite kerb and channel in High-street and Blake Hall-road, for the Urban District Council. Mr. C. Herbert Bressey, Surveyor, Council Offices, Wanstead, N.E. Quantities by Surveyor:—

Parry & Co.	£329 15 8
W. Manders	319 11 8
G. Bell	295 18 5
T. Adams	295 2 8
Harber & Co.	284 7 9
W. Griffiths	282 11 9
Seymour & Hanson	281 15 0
D. T. Jackson	281 0 10
S. Porter	276 18 7½
O. T. Gibbons	275 0 0
W. & C. French	267 10 10
G. J. Anderson	266 7 1
Welson Border	258 18 9
J. Jackson	258 8 4
B. W. Glenny	255 18 0
Parsons & Parsons, Ilford*	253 3 11

[Surveyor's estimate, £282 6s.]

WIGGENHALL ST. GERMANS (Norfolk).—For additions to cottage and general repairs at Fitton Hall, for Mr. W. Wing. Messrs. Walker & Walker, architects and surveyors Wisbech and Terrington:—

Ashby, Ltd.....	£262 15	J. Holman	£208 0
Tash & Langley ..	249 10	Johnson & Son ..	175 5
Lawson & Co.....	230 0	R. Eggleton, Terrington, King's Lynn*	168 0
C. Lewis	226 6		
E. Means.....	226 0		
J. Medwell	225 0		

CORRECTION.—Messrs. Walter Lawrence & Son, building contractors, of Waltham Cross, ask us to correct the spelling of their name given under a tender for insurance office, Finsbury-square, in our last issue. It should be Lawrence, not Lawrance.

Ham Hill Stone.
Doulting Stone.
Portland Stone.
The Ham Hill and Doulting Stone Co., Limited
(incorporating the Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.).
Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS,
Employ a large and efficient Staff especially for Bills of Quantities, &c.
4 & 5, East Harding-st., Fetter-lane, E.C.

GRICE & CO., Ltd., STONE MERCHANTS.
ADDISON WHARF, 191, Warwick Rd., KENSINGTON.
Building & Monumental Stone
A LARGE STOCK OF BEST
CAEN Stone & Alabaster For HOME TRADE and EXPORT
in Block, Slab, and Scantling.

Telephone: DALSTON 1388.
OGILVIE & Co.
(Many years connected with W. H. Lascelles & Co., Ltd., of Bunhill-row),
Amhurst Works, DALSTON LANE, N.E.
Experts in High-class Joinery, Alterations, and Decorations.
ESTIMATES SUBMITTED.

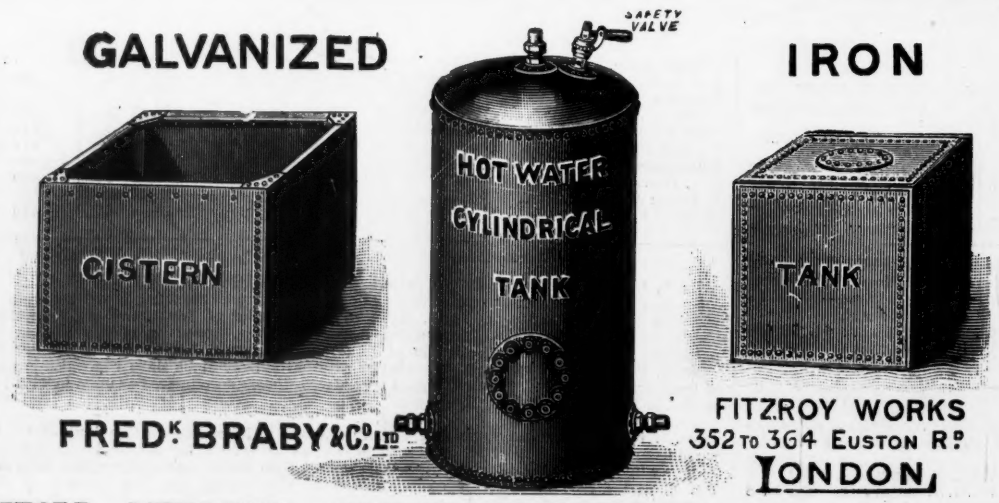
J. J. ETRIDGE, Jr.
SLATE MERCHANT,
SLATER & TILER.
Penrhyn-Bangor,
Oakeley-Portmadoc.
BEST WORK ONLY.
"RUSTIC BROWN"
Roofing Tiles a Speciality.
Applications for Prices, etc., to
BETHNAL GREEN SLATE WORKS,
Bethnal Green, London, E.

ASPHALTE
For Horizontal & Vertical Damp Courses.
For Flat Roofs, Basements, & other Floors.
The best materials and workmanship are supplied by
THE
French Asphalte Co.,
Whose name and address should be inserted in all specifications.
For estimates, quotations, and all information apply at the Offices of the Company,
5, LAURENCE POUNTNEY HILL,
CANNON STREET, E.C.

WE ARE THE ORIGINAL INTRODUCERS OF THE HOT-WATER CYLINDRICAL TANKS.

Telegrams: "Courteous, London."
Telephone: 2100 North (three lines).

GALVANIZED IRON



FRED^K BRABY & C^O LTD
FITZROY WORKS
352 TO 364 EUSTON R^D
LONDON.

ILLUSTRATED SHEET, SHOWING APPLICATION OF OUR HOT-WATER CYLINDRICAL TANKS, SENT ON REQUEST.

AND AT DEPTFORD, LIVERPOOL, BRISTOL, GLASGOW, FALKIRK, BELFAST, AND DUBLIN.